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# Computer Weekly

Thursday, June 17, 1982

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# Computer Weekly

Thursday, June 17, 1982 Number 814 30p

'82. A great  
year  
for PTZ

PTZ: THE ADVANCED  
FEATURE  
TERMINAL FOR  
ICL AND IBM

**FERRANTI**  
Computer Systems

## Cuts could damage research permanently

by Philip Hunter

COMPUTER departments at universities and polytechnics have suffered more than they expected in the current round of government cuts. And the government has been warned that permanent damage could be done to research in the UK unless more money is provided.

This is the view of many key figures both inside and outside the universities, who claim that some young computer science departments without well-established roots have withered in the financial drought.

"At St Andrews University, the computer science department has been wiped off the map because other departments are strong," says Gordon Ewan, training executive at the Computer Services Industry Training Council.

The application of cuts at particular universities is usually determined by the clout each department wields within the university itself, rather than by the department's contribution to industry. As a result government cuts are sometimes apportioned differently from the way they were originally intended.

The government was warned last week that university research in general will suffer over the next few years. The warning came from an official working party led by Sir Alec Merriam, vice-chancellor of Bristol University.

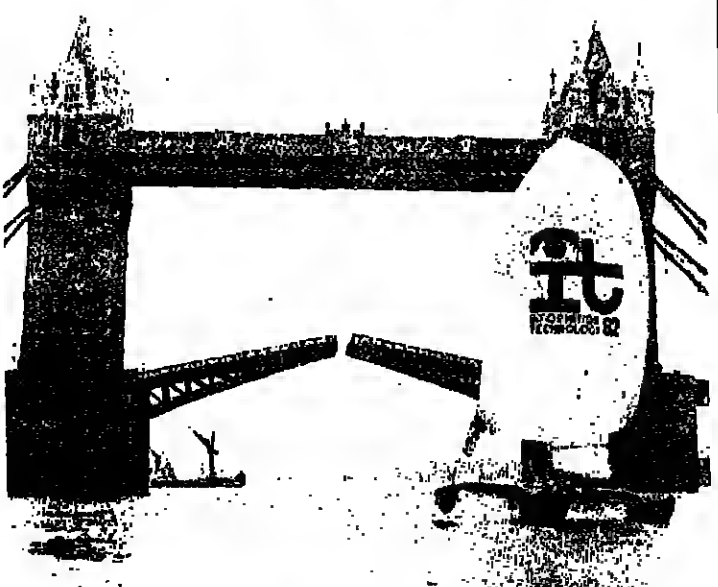
Unless "relatively modest" sums of money are put up by the Department of Education permanent damage will be caused to the UK research effort, a report from the working party says.

The report comes out in favour of the dual funding system, by which university research is supported both by the University Grants Committee (UGC) and by other external bodies such as SERC, the Science and Engineering Research Council.

But dual funding is not popular among all academic staff at universities. According to Jozef Gluz, also a local secretary of AUT, the Association of University Teachers, dual funding can lead to research being funded on the cheap.

"Universities are employing staff on outside grants who should be on UGC funds," he says.

Few of the staff at the Cambridge University computing laboratory enjoy security of tenure and this, says Gluz, can prejudice the research effort.



IT 82, Information Technology Year's spontaneous entry in the Binatone Round Britain race starting on July 10.

## Images over the waves

by Jack Gee

A NOVEL computerised communications system devised by France's Thomson-CSF has enabled television images to be transmitted thousands of miles across the ocean from yachts taking part in a recent Transatlantic race.

The Thomson venture enables news media to follow a sea contest which cannot be covered by reporters on the spot.

Thomson has proved it can overcome this handicap thanks to its Telexel system which feeds a video signal from a shipboard camera into the microphone input of the vessel's radio.

Signals transmitted in this manner were received at the Thomson Press centre in the centre of Paris, reconverted and the image displayed on standard television screens. The audio information was recorded on tape and played back in the form of images.

In London last week, yachts also featured in information technology. An IT 82 yacht which is taking part in the Binatone Round Britain and Ireland Race made its debut on the Thames.

## 'TV cable must be two-way'

by Donald Kennist

THE capacity for two-way data transfer over a television cable network is determined by the way the network is used.

Speaking at last week's meeting of the Parliamentary Science and Technology Committee, Information Technology Minister Lord Baker confirmed that it has been decided in private discussions between the various government departments in advance of any of the studies currently under way.

Cable television networks in the US must have this capability to qualify for a franchise. The calls to re-cable the UK, which advanced interactive services for the medium to long term, if television programmes and distribution dominated service traffic and economics in the days.

But until the role of the Telecom is established it is unclear whether the two-way wideband network would work with BT's network, or be part of it.

"BT has great experience in this area," says Lord Baker, "and I am anxious they should harness it."

Lord Baker said that a technical, judicial and commercial framework that would exploit a wideband network and also foster the UK industry in the production of software and hardware for such services that would run on the most complex systems in this country would be needed.

## CPI to shut UK plant

by Andrew Thomas

SEVEN years after being saved from the dole queues, 190 mostly ex-ICL employees will again be heading for the job centres. The Computer Peripherals Inc printer plant in Stevenage is to close in October as part of Control Data's complex recovery plan for ailing printer manufacturer Centronics.

CPI came into being in October 1975 to produce printers and other peripherals for ICL, NCR, and Control Data. CDC took a 60% share and the other two partners 20% each. Most of the initial workforce was composed of redundant ICL workers from the Stevenage/Leitchworth area.

In January of this year it was decided that all of CPI's printer business, worth between \$50 and \$70 million, would be handled by

## Plessey into office automation

by Sarah Harcourt

PLESSEY has made its long-awaited debut in the office automation arena with the launch of its Integrated Business Information System.

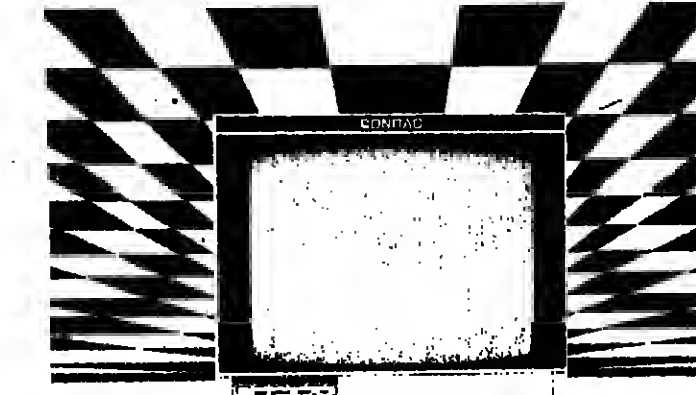
With the announcement, Plessey emerges as a leading protagonist of the PABX or star based approach to office automation.

The system is built around Plessey's PDX private automatic digital telephone exchange and includes the first of a planned series of terminals, software products and facilities for connection to other networks. Terminals and word processors from other manufacturers can be easily connected in the system.

Graham Burke, director of Plessey Office Systems, said: "We decided three elements must be incorporated: an architecture facilitating communications between all types of devices; a range of workstations satisfying all users; plus a range of application packages providing users access where and when they want it."

"By basing this on the telephone network, terminals can be sited wherever there's a telephone access point. In addition, existing network users are not involved in a major upheaval when office automation is introduced."

To accommodate the office system, Plessey has upgraded the PDX to allow voice, text and data to be carried down existing telephone lines simultaneously. Upgrades to existing installations can be done in the field.



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Printed in Great Britain by QB Limited, Stevenage, Herts. Published by TPC Electrical-Electronic Press Ltd, Chesham, Bucks. MK2 5AS.

## Co-operative agreement for local area networks

# 20 firms join in international standards

by Nicholas Eideknap

A CO-OPERATIVE agreement on international standards unparalleled in computer industry history was announced in London this week by ICL on behalf of 20 companies. They include CIT, Honeywell Bull, Digital Equipment, Fujitsu, Hewlett-Packard, Intel, Siemens and Xerox.

These companies have declared their commitment to supporting two European Computer Manufacturers Association standards for local area networks. In International Standards Organisation (ISO) communications terminology, they relate to the bottom four of the seven layers: the transport layer, the network layer, and the physical and data link layers.

The latter two are covered by a single new ECMA standard, but approved only two weeks ago, which is largely compatible with Ethernet. The data link layer specifies the use of CSMA/CD (carrier sense multiple access with collision detection) techniques, as opposed to the ring or token-passing techniques used by some systems competing with Ethernet.

The CSMA/CD techniques are related to the physical medium, which is baseband coaxial cable, as opposed to fibre optic cable.

The 20 companies go further than Ethernet, however, in supporting the ISO transport layer protocol as well. This is based on an existing ECMA standard. It guarantees data transfer from one device to another independent of the physical medium.

ICL said that the system it has been describing over the past year as "a ten megabit LAN" will support these new standards, but it announced no new products.

ICL will offer LAN support and consultancy to users setting up their own pilot systems through its Netkil operation. It will be available to both ICL and non-ICL users. The company added that products implementing the standards in silicon will be announced within a year.

The other companies committed to supporting the ECMA standards are Logica BTS, L. M. Ensson, Mitec Corp, NTL, Nixdorf, OTL, CTL, ITL, Olteco Olivetti Telecomunicazioni, Ungerman Bass, 3 Comm, and Three Rivers Corp.

The significance of the agreement was spelt out in typically eloquent fashion by ICL managing director Robb Wilmut. "Hitherto we have had a world dominated by de facto standards and no human performance that can come with a single dominant supplier," he said.

"The lack of international standards has slowed down the growth of information technology, and prevented users from realising the full value of their investment."

It also, he said, involved them in additional unnecessary expense, such as gateways, protocol converters and special software. The new agreement, which Wilmut described as "unprecedented", makes a major contribution to stopping all that, and must be hailed as a landmark step in the evolution of information technology, notwithstanding the absence of IBM from the list of supporting companies.



JENKINS "Job turnover will be tremendous"

## '5 million jobless by 1984 unless govt acts on technology'

by Kevin Pearson

UNEMPLOYMENT in Britain could rise to five million in less than two years unless the government acts positively to prepare society for the introduction of new technology, Clive Jenkins, leader of one of the UK's largest white collar unions, told the World Computer Services Industry Congress in Copenhagen this week.

Jenkins, general secretary of the Association of Scientific, Technical and Managerial Staff, added that he had "profound doubts" in the idea that the computer services industry would create jobs.

He said: "Job turnover will be tremendous, and casualties enormous. Even Japan is not immune. We are now seeing the first signs of unemployment growth in Japan."

The effect of job losses, said Jenkins, would fall on both the traditional manufacturing industries already in heavy decline, and on office jobs.

In the City of London alone 350,000 office jobs would vanish in three years, he predicted.

In the future we would radically need to redefine what we mean by unemployment and restructure the education systems to provide "tertiary training". He said the impact of new technology on employment would not be overcome solely by a reduction in the retirement age or by a cut in the working week.

Commenting on the problems faced by the UK, he said selective import controls and a reintroduction of exchange controls were necessary. This, he added, would

## NEWS BRIEF

### Videotext for Personal Computer

IBM last week announced videotext products in the US on its Series 1 minicomputer and on the Personal Computer. The announcement follows IBM's successful bid to supply a £12 million public videodata system to the West German Bundespost telecommunications authority last year.

The Personal Computer videotext facility is supplied under IBM's third party software scheme by Wolf Data in the US and consists of a plug-in "feature card".

### Japanese talks

IBM has confirmed that talks are under way with Japanese consumer electronics manufacturer Matsushita, but no agreement has yet been reached on a joint venture to produce and sell personal computers. IBM plans to launch a machine capable of handling the Japanese language.

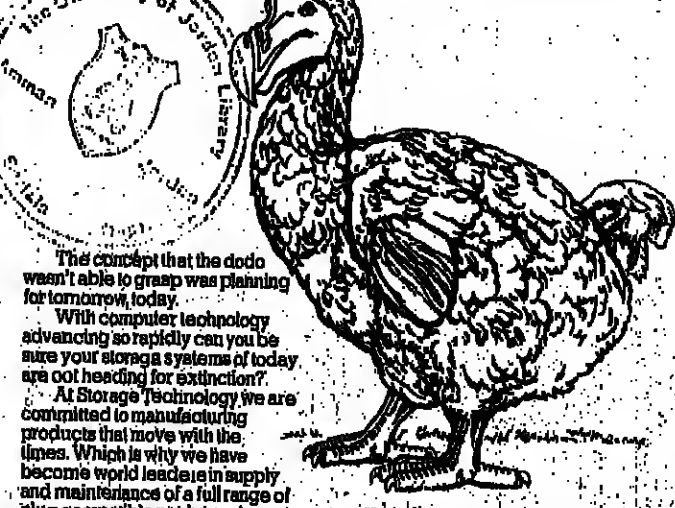
### Sale of IAL

IAN SPROAT, Under Secretary of State for Industry, confirmed in the Commons on Monday that the sale of International Aeradio (IAL), a subsidiary of British Airways, was under consideration. IAL specialises in telecommunications for the aviation industry and for defence.

### Aregon news

DOW JONES, the US' leading information provider with over 44,000 users, has opted for Argon's IVS-3 videotext system for the Princeton New Jersey cable TV system. IVS-3 will also be able to offer news and information to other US cable systems.

## EVOLUTION OR OBSCOLESCENCE?



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STORAGE TECHNOLOGY

## Dol gives its backing to high-level language translation project

by Claire Gooding

THE Department of Industry is backing an ambitious project to translate applications written in Basic into the portable high level language C.

If successful, it could bring a flood of much-needed end user software into the busy Unix market, and further its case to become a standard.

The Microelectronics Applications Research Institute, MARI, in Newcastle-upon-Tyne is getting a 50% grant of £25,000 to build experimental translation facilities for the project.

Although the C language is usually associated with the Unix operating system from Western Electric, the language is taking on a life of its own. While C is a high level language, it has the acute powers of an assembly-like language and has proved itself in systems and applications programming. Unix itself is written in C.

The Department of Industry sees that C could be a useful language for a lot of software," explained MARI's manager of advanced software, John Dobson. "It will also be of interest to people who want to go with Unix and take their applications with them."

Once translated into C, applications would be highly portable across a variety of machines, and very efficient in execution, unlike most translated or generated programs.

Although there is a Unix version of Basic, it makes more sense to translate programs into C so that applications can link directly with Unix facilities.

"Putting a package into C is the first step," said Dobson. "Once there, software suppliers can produce a version with extra books into the OS to exploit the Unix environment. Our translator will be geared to people who want to do that."

Professor Brian Randell of Newcastle University has backed the Unix philosophy as the way forward to a national programming standard. His proposals, already tested against several large British software houses such as CAP and Logica, were presented at a seminar at the Royal Signals Research Establishment. They will go forward to the Alvey Committee, set up in response to Japanese "fifth generation" plans, for presentation to the Department of Industry.

"The Unix interface has a chance of becoming the ad hoc standard of the Eighties. That doesn't mean it is perfect, but many organisations, including MARI, have already voted for it with their feet and their wallets."

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# System generator from Burroughs 'will open up new market areas'

by Maggie McLening

AFTER a two-year wait, Burroughs has finally rewarded its UK users with a system generator.

The Logic and Information Network Compiler (Linc) system was written in New Zealand, and was run in test user sites there before being launched in Europe.

"Because this is such a crucial product for us, we wanted to ensure that it was a mature package, and that we wouldn't have to pioneer it," explained Alistair Taylor, hardware products marketing manager.

In 1980, Burroughs was approached by Datalog Management Systems in Hampshire to see if it was interested in an online development tool, DPS, which Datalog was developing to run Burroughs hardware. Firmly declining, Burroughs said it was about to launch something similar of its own shortly, but nothing appeared in the UK.

Release of Linc has been timed to coincide with that of The Business Partner, a complete hardware and software package designed to

support business information systems. Although it is currently available only on the B1000 range, it is due to be implemented on other machines of varying sizes by early 1983.

Written in Cobol, Linc generates a complete DMS II relational database design from the input data, including entry facilities, maintenance and deletion. It also provides reporting and ad hoc enquiry facilities through its definition language, LDL.

Burroughs claims that Linc will enable users to develop systems in a fraction of the time normally taken, quoting 90% reduction in development time for communications networking systems. A New Zealand user has quoted comparison figures taken from a spare parts system written by his company, which has 17,600 Cobol statements being rewritten in 1,518 Linc statements.

Burroughs claims that one Linc statement is equivalent to between eight and ten in Cobol.

According to Alan Payne, Linc product manager, Burroughs ex-

pects it to break new ground for the company.

"It will open up new market areas for us, because there is no conversion involved for non-Burroughs users buying a system. We are looking for software houses to get behind Linc-produced applications to enhance this line of business," he said.

Discounts will be offered on hardware to software houses adopting the product, but Taylor expects that Burroughs-orientated companies will probably have to take it anyway to make their timescales more competitive.

"There are a lot of people around with programming aids, but there is nothing else on the market that does all this," claimed Taylor.

"The major benefit is really in prototyping," explained Payne. "The designer can find out immediately if the system will do the job, and Linc eliminates all the uncertainty."

Three orders have been placed for the £34,000 system so far in the UK.



PALMER... "System will help to handle 60,000 bookings a day".

## Holiday group designs own mainframe-based viewdata network

by Donald Kennett

AN unusually high throughput requirement persuaded Thomson Holidays to design its own mainframe-based viewdata network for its online reservations system.

The company ran a two-year trial with 66 travel agents accessing Thomson's mainframe database via a Rediffusion private viewdata system. But in planning to boost the system to serve 2,000 agents this year and over 4,500 eventually, Thomson decided a mainframe was necessary to handle the volume of traffic and run the three-gigabyte reservations database.

Thomson brought forward the hardware upgrade it was soon going to need anyway - from a pair of IBM 370/158s to a pair of Amdahl 470V/7Bs - and placed a £100,000 development contract with Taplow-based micro systems house, Micro Scope for a variation of Micro Scope's multiple 280-based network controller.

Commercial director Colin Palmer says the system, called Top (Thomson Open-line Programme), is due to go live during the peak

booking period in September and October, supplementing the 200 telephones manned by agent support staff in London and 10 regional offices. It will help to handle an expected 60,000 bookings a day.

It will also help at the other peak traffic period early in the summer when the volume is generated by the search for alternatives as holiday packages become fully booked. One benefit of viewdata discovered during the trial was that clients believed a holiday was fully booked after seeing it on the screen, whereas after hearing a telephone message from Thomson's relayed by the agent they often tried to book the same holiday through several other agents.

Modifications carried out on the company's existing TRACS reservation system to support access by travel agents include an enquiry program which pulls up to 49 pages of alternative holidays (three or four to the page) from the database in response to selection criteria including price bracket, number of people, type of holiday, area and point of departure.

## DEC, Intel, Tektronix adopt graphics standards

by Philip Hunter

A SHOT in the arm for writers of graphics software has come with the adoption of two new graphics standards by three large US corporations. The standards involve address methods for creation and transmission of computer graphics images.

Digital Equipment, Intel and Tektronix, which are adopting the standards, will incorporate them into all future products. The effect will be to increase portability and enlarge the market for software written to the standards.

A joint statement on the standards was made by the companies today (Thursday). It follows internal research on the standards by all three, and representation by them on the technical committee

of ANSI, the American National Standards Institute.

The first of the two standards is the North American Presentation Level Protocol Syntax (NAPLS) developed by the Canadian department of communications. This is a communications protocol for the transmission of graphics between different manufacturers' hardware. This protocol is being considered for adoption by ANSI.

The other standard being adopted is VDI, Virtual Device Interface, which is being developed by a technical committee of ANSI. It will provide standard access to graphics functions, with a resulting improvement in portability of graphics software.

Other companies are being encouraged to adopt the standards.

## NEWS BRIEF

### Tandem to double its German plant

NONSTOP system manufacturer Tandem Computers is to more than double the capacity of its plant at Neufahrn, near Munich.

Originally opened in 1980, the building is to be enlarged to take a workforce of 200, and provide an increase in shipments from under \$40 million to \$200 million per year. The extension should be ready for production by 1984.

### DEC services

TWO user support services have been announced by Digital Equipment. DECstar offers on-site assistance, workshop training and hands-on experience to familiarise staff quickly with a new system. Network Product Service provides technical expertise in troubleshooting network problems.

### Geest agreement

GEEST Computer Service has signed an agreement with ICL under which it will market the ICL DRS 20 range. An initial order worth £120,000 has been signed.

### Software deal

THROUGH its Trade Fair Scheme, ICL is to market Hildel Automation's microcomputer software throughout Europe and US with its new personal computer. Holland Automation, a European microcomputer systems house, specialises in process-independent software. The deal will bring the number of microcomputers running its software to 20.

### Sony profits drop

JAPANESE consumer electronics manufacturer Sony has reported a drop in half-year profits to £1.2m of April by 6.5% to £1.3m, despite increased turnover of 7.1% to £2.1 billion.

### Revenue up 68%

CULLINANE Data Systems has announced a 68% revenue increase for the year ended April 1982 from \$29.4 million to \$49.5 million. Net income for the year was \$7.6 million.

### First fruits

A TWO-CHIP set designed to implement Ethernet and local area networks will be made generally available by Fujitsu in the fourth quarter of the year. The chips were designed by Ungermann-Bass for use in the Net/One Ethernet-compatible systems from next month and are the first fruits of an agreement between the two companies which is expected to cover a succession of semiconductor products for local network market.

### 5,000 activities

A MULTI-USER project management system for IBM and MVS based desktop microcomputers has been launched by IBM Corp. The computer company, a subsidiary of the Group, Janni uses the same work calculation method as its mainframe systems, and can handle up to 5,000 activities.

## SOFTWARE FILE



IMLAY... "You can sleep with an elephant until it rolls over."

## 'IBM is an ally—at the moment'

by Boris Sedacca

"YOU can sleep with an elephant until it rolls over." This is how the world's largest software house regards its relationship with the world's largest computer manufacturer.

John Imlay, chairman of Management Science America, and long-time benefactor of IBM in the market for applications software, says of IBM: "Right now, IBM is an ally rather than an enemy. But I emphasise 'right now'."

"At the moment IBM's software is in the systems area whereas we concentrate on applications software," he said. Imlay is an influential member of the Association of Data Processing Service Organisations, the US counterpart to the UK Computing Services Association. But Adapso is somewhat bigger, more aggressive and exclusive.

Adapso and the companies whose interests it represents are a little jittery about IBM's planned re-entry into services now that the US Justice Department has stopped breathing down its neck. "When we first heard of IBM's intentions in the services industry, we debated whether to sue or not, but given IBM's position in the market, we decided that this course of action was fruitless."

"Anyway, IBM is not in direct competition with us, so we decided not to sue but to keep an eye on the company, and it has been pretty open about what it is doing."

"We are more concerned about AT&T now that it has divested itself of its low-yield telephone companies. There is a patent an hour coming out of Bell Labs and it has Unix," he said.

## SOFTWARE BRIEF

### Minister for seminar

A PUBLIC seminar has been organised by the Computing Services Association at which Kenneth Baker, Minister for Information Technology, will explain the objectives of the revised Software Materials Scheme, and outline procedures for companies applying for government grants. Scheduled for next Tuesday, June 29, at the Dorchester Hotel, London, the seminar will include speakers from the CSA, NCC, and Altimax MacDonald of the IT Division of the Department of Industry. Reservation of places is through the CSA.

### Direct labour

ORDERS for direct labour organisation systems, written to Chartered Institute of Public Finance and Accountancy (CIPFA) specifications, are now coming in fast, after a slow start. CMC now has 21 orders from local authorities, ICL has at least as many, and NCR has five for its NCR Direct system, with others in advanced negotiation.

## Package firms see business boom in changes to payroll systems

IT's an ill wind of legislative change that blows nobody some good business, and the Social Security and Housing Benefits Bill due to be passed in July looks like being no exception.

At first sight, amendments to payroll systems to cater for the Statutory Sick Pay (SSP) requirements may not seem drastic, but they could render obsolete many microcomputer-based systems without capacity for expansion. Widespread reassessment of existing systems, however, coupled with the timescales involved, are bound to generate an upsurge in business for the package suppliers.

Under SSP regulations to be implemented by April 6, 1983, when the Bill becomes law, sick pay will be calculated on an employee's average earnings over the previous eight weeks. Recording information in this way will mean enforced file expansion for many systems that only keep a total of pay to date. Additionally, periods of sickness will be linked to determine starting dates for payment, which means a much closer interface with personnel systems, whether manual or computerised.

According to Peterborough Software, whose leading payroll package Unipay has about 600 users in the UK, most employers are waiting until the last minute before worrying about SSP.

"Although a wave of new interest has started, many companies are taking a 'head in the sand' attitude", said Tony Bewa, general marketing manager of Peterborough Software. "I don't think they realise just how determined the government is on this issue."

Facilities to cope with SSP already exist within Unipay, and because it is closely integrated with the Unipay personnel system, cross-referencing on spells of illness will be possible online. It only remains for users to specify or re-define code meanings to be able to go live immediately.

In real terms, the new systems must be up and running by about Christmas, because of the eight-week run-in.

Peterborough is looking at other areas of potential expansion. Growing popularity of program and report generators has made the company consider releasing its

own, which would be a more general version of the one currently sold within the Unipay system.

"Over the next three or four months, I have the task of seeing if we can take advantage of this type of product, either developed through the company or as a separate system. Through the years we have built up a lot of knowledge, and now is the time to take advantage of it", explained Bewa.

Changes to sickness pay and benefit rules which will affect computerised payroll systems are scheduled to be implemented in April 1983. A report in our June 3 issue may have suggested the changes had to be made by July of this year. Guidelines outlining the changes will be published by the Department of Health and Social Security next month.



BIEWS... "Many companies are taking a head in the sand attitude."

## Zilog brings word processing to System 8000

by Claire Gooding

ZILOG has introduced a sophisticated word processing function to its System 8000. The Uniplex package builds on the facilities already provided by the Unix operating system on which Zilog based the Z8000 OS Zeus.

Although Unix is a popular system because of the facilities it provides to programmers, it is not the easiest of OSs for end users. Zilog has tried to overcome this problem by adopting a word processing package written by a UK company, Redwood.

The system works on menus which can be defined by the user himself. They can be configured to use all or some of the Unix facilities so that users have available the vast variety of Unix features without having to be familiar with the specific "driving instructions".

Effectively the Uniplex software eliminates the need for inside knowledge.

The Uniplex package is available now at a one-off price of £995.

## Cabinet Office voice option makes debut at exhibition

by Donald Kennett

MASTER SYSTEMS, the main distributor for Xionics' Xibus office automation system, demonstrated its voice message option for the first time at the Office Automation Show in London last week. The option is to be installed on the Xibus system at the Cabinet Office in the next two months.

The Xibus mark two VDU has a telephone handset and three extra control buttons for the voice function. It allows voice messages up to 21 seconds long to be stored digitally. They can be sent on their own, appended to documents or text messages, or chained together as dictation.

Wang also demonstrated voice messaging at the show, using its Alliance mini-based information system. Both systems display a row of blobs on the VDU at one second intervals while the message is being recorded and then follow along the row with a cursor when it is being played back.

Plessey exhibited the Ibis integrated business information system which it launched the previous week. A cluster of terminals around a CDSS-I digital telephone exchange for less than 100 lines was connected to a 200-line PDX digital exchange at the Business Efficiency Exhibition in Harlow Court on the other side of London.

Launched in 1978, the PDX is now claimed to have 40% of the UK market with 100,000 extensions installed.

Devices attached to the exchanges included the mark II version of the £520 Vutel telephone handset with a five-inch monochrome viewdata screen built in. The mark II has printer and keyboard



Plenty of interest in the Plessey Ibis system at the London show.

sockets added and will cost a little more when it is released shortly following British Telecom approval. The mark I is already available through BT as a special telephone.

Fortune Systems' one-man UK subsidiary in the form of Bill Macpherson was out looking for distributors, OEMs and vertical market software houses to take on the £4,416 Fortune 32:16 68000-based microcomputer with its reverse-engineered Wang OIS word processing package running under

Unix. Accounting packages including payroll, inventory control and the ledgers are on the way, to take their places with Microsoft Multiplan, an enhanced version of Visicalc which enables information to be passed between spreadsheets.

Ethernet and X25 interfaces are due in the first quarter of next year, along with an intelligent controller for links to satellites and IBM mainframes.

Macpherson is also looking for third party maintenance companies.

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## COMPANY NEWS

## City reacts favourably to ICL results

WITH the ICL results now moderately digested, the various City analysts are beginning to re-think their forecasts of the company's year-end profits.

Generally, the reaction has been favourable, most attention focusing on the ICL balance sheet. It has been much improved by the addition of Computer Leasing Ltd's assets of £28 million.

Neil Barton of Manchester brokers Henry Cooke Lumsden says that the balance sheet is recovering fast, and by September 1982 borrowings, other than deferred debt, could be less than shareholders' funds.

As a measure of the net worth of a company the balance sheet has a direct bearing on the borrowing power and credit-worthiness of a corporation. Currently ICL's debt exceeds the company's shareholders' funds by £56 million. Without a government guarantee banks would be unlikely to lend under these circumstances.

Barton has scaled down his estimates of ICL's profit for this financial year to £20 million, from his previous forecast of £25 million.

## IBM trails inflation

AT a special briefing in London last week, IBM released further details of its UK finances.

Despite an £8 million rise in profits, IBM UK's profit performance is still trailing inflation in the UK. Profit for 1981 was £161 million, a 5.2% rise on 1980's £153 million.

With inflation in the UK running between 10% and 12% last year, this leaves IBM's profit growth behind that of the US parent, and well down on the Japanese subsidiary's 20%.

However, the company has made a massive capital investment of £118 million in plant and facilities in the UK and sent back £56 million in dividends to the parent company, both of which will have helped to keep profit figures down.

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**inex**

## Firms needing funds met finance companies at the CW/Barclays conference



Weedon of Keen.

Chairman Wood of BTG.

Entrepreneur Melchor.

## How to set up in business—without losing your shirt

A CONFERENCE ends when the hotel switches off the lights, and the shutters come down.

Or does it? Despite a power failure, which limited the light for a while, the Computer Weekly/Barclays Bank First Time Financing conference last week marked a beginning rather than an ending.

A straw poll by the final speaker, Ros Weedon, chairman of Keen Computers, showed that about 30% of the delegates were about to start up their own companies. The same quick poll revealed that about 50% of those present were running their own businesses already.

The finance industry, including Barclays' management, was represented, and one of the key conference objectives, to bring together those seeking finance and those ready to provide it, seemed likely to be met.

Time will tell whether the meetings resulted in positive financing. Meanwhile, both parties learned a great deal from each other. Luncheon guest speaker Jack Melchor, one of the best-known American venture capitalists, described his trade as a little like making love to an elephant. If you succeed you had to wait a long time for the result, if you failed you got trampled to death.

Melchor, a physics PhD, got into the business of venture finance through the accidental medium of a drinking club's \$100-a-month investment pool, which he managed. He explained that the objective for a venture capitalist is the creation of wealth, and with that wealth, freedom of action.

Melchor talked about the Anglo-American fund which he manages on behalf of the National Enterprise Board (British Technology Group), and which has as one of its purposes the creation of employment in the North-East of England. The pursuit of profit by American venture capitalists in the Bay area of San Francisco alone led to the creation of between 600,000 and 1 million jobs, and over 100 millionaires within 20 miles of Melchor's office.

Weedon amplified a theme of Melchor's when he talked of the need for the entrepreneur to have a big enough stake in the business that it hurt if the business went wrong, but would not prove fatal to home and family.

Indeed, the theme of so structuring the start-up finance that family homes were not put at risk by a business failure was a constant one with venture capitalists and company delegates during question time.

Despite the apparent problem this creates for Barclays in relation to some of its traditional lending, Ian Loven, one of the sponsor bank's speakers, was able to announce that Barclays would be relaunching its Business Start Loan scheme next week.

The scheme, one of the most attractive loan propositions on offer by any bank because it requires no personal guarantees, no interest repayments other than a royalty on sales, and no capital repayments for five years, was put into suspense while Barclays reviewed its initial experience with what is basically high-risk, venture type lending.

The bank seems to have decided that, despite some failures, this form of lending represents a useful compromise between secured lending, and direct equity investment.

There also appeared to be a wide degree of consensus among the finance speakers upon the need for equity, that is, pure invested cash in the form of shares purchased, in the early stages of a company's existence. John Robertshaw, chairman of United Computers and Technology, said that his organisation was in the business of providing this early equity to small computer companies.

He suggested to the delegates, echoing a theme from last year's Financing Conference, that getting to know the financiers like himself as far in advance of the need for capital as possible was a good idea.

Making the most of the various government schemes for product start-up grants and market launch assistance was a point made by both Dr John Parkes of the DoI and Eddie Bleasdale of Bleasdale Computers.

Bleasdale's company made wide use of the MAP scheme in its early stages, and he recommended the delegates to look carefully at schemes like it, which could help reduce dependence on expensive loans.

John Saunders and other Barclays speakers all laid strong emphasis on the fact that the bank's 14,000 managers all used different

approaches to individual lenders. Naomi Langford Wood, managing director of PMB, which started up with a Barclays loan, jokingly confirmed this point by recalling that four Barclays branches had turned her down before one accepted her proposal. She suggested that a good sales pitch based on a professional business plan was an essential part of the successful hunt for start-up capital.

The conference was opened by Rt Hon John McGregor, MP, and chaired by Sir Frederick Wood, chairman of the BTG, and Professor Frank Sumner of Manchester University. Over 120 delegates and guests attended.

This will come about as a result of the lessening dependence on technical innovation and unique software and increasing market susceptibility to lower prices.

Pateron goes along with the common view that the growth of the micro supplied market has gradually eroded the role of bureaux, but he adds an important rider to the effect that there will be opportunities for bureau suppliers of sophisticated programs running on central processors or desktops.

This leaves an important slot for the specialist bureaux like Ralf and Nolan, C & CF and NMW, all of which have reported good results recently.

Franklin's case is in two parts. Firstly, it denies that it has infringed any patent or copyright or otherwise violated any law in connection with the manufacture, sale or use of its Ace 100 personal computer.

Secondly, it counter-alleges that Apple has engaged in "anti-competitive and predatory practices" which are illegal under American anti-trust legislation.

Franklin is asking for triple damages amounting to \$150 million as well as its legal expenses.

Apple declined to comment on Franklin's allegations, other than to say that the matter was in the hands of its lawyers. Apple UK's marketing director, Stephen Brewer, pointed out that Apple's senior executives have been in England for the past few days and have not therefore been able to study Franklin's allegations.

In denying Apple's allegations, Franklin president Joel Shusterman described one of the patent infringement claims, regarding colour displays, as "quite frivolous," as the Ace 100 does not have colour capabilities.

Shusterman also said that DOS 3.3, the operating system written by Apple and used on the Ace 100, is not protected by patent or copyright.

In its anti-trust counter-claim, Franklin mentions specifically damages amounting to \$150 million as well as its legal expenses.

Apple's policy of terminating dealerships with companies which sell by direct mail or telephone contact; other coercive dealing practices; discriminatory licensing practices; and misuse of patents and copyrights.

The lawsuit was the second time in a week that Franklin had given Apple something to think about. Franklin had, not unnaturally, not been invited to Apple's annual Applefest junket in Boston, US, but the company went anyway and used the three models in our picture to promote the Ace 100 to the queues of visitors waiting to enter the auditorium.

The Ace 100 is described by Franklin as being hardware and software compatible with the Apple II. However, the company adds, it has features not found on the Apple II, such as 64 Kbytes of RAM and upper and lower case output.

by Kevin Cahill

## 'Industry growth will continue'

INDUSTRY watcher John Pateron of stockbrokers Smith Keen Cutler takes the optimistic view that growth in the computer industry will continue at a compound rate of 30% through to 1986.

Pateron, who has just presented his first full review of UK computer companies, with the caveat exception of ICL, says that while current investment opportunities remain limited, this should improve throughout the remainder of the decade.

In a summary which precedes his share recommendations, he notes that the market has been affected by established mini-makers who have suppressed the development of micros in order to protect their markets.

The new micro conceived companies such as Tandy are pushing hard for the acceptance of powerful micro-based systems. These could replace the current generation of minicomputers, a development which will go hand in hand with distributed data processing.

Pateron suggests that by 1984 the Japanese will have made major inroads into the UK market.

This will come about as a result of the lessening dependence on technical innovation and unique software and increasing market susceptibility to lower prices.

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The conference was opened by Rt Hon John McGregor, MP, and chaired by Sir Frederick Wood, chairman of the BTG, and Professor Frank Sumner of Manchester University. Over 120 delegates and guests attended.

## CW SHARES TABLE

Date 15/6/82		Index 100.00		Change	
Fence		US Stock		Price	
High Low		High Low		Price	
188	187	188	187	188	187
187	186	187	186	187	186
186	185	186	185	186	185
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183	182	183	182	183	182
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4	3	4	3	4	3
3	2	3	2	3	2
2	1	2	1	2	1
1	0	1	0	1	0



# The making of a successful systems analyst



Owen Hanson is head of the Centre for Business Systems Analysis at the City University, London. He is also a consultant to a number of companies, including IBM.

THIS time of year, in the universities, is one of leave-taking. Students are sitting examinations at present, and soon many of them will be looking for their first posts in the DP industry, or returning to their jobs.

At City, we run an MSc in business systems analysis and design, a postgraduate diploma in systems analysis, and a BSc in business computing systems. MSc students will spend the next three months working on projects of their own choosing. This year, some will look at systems in hospitals, wholesale merchants and microcomputer companies, while others will examine subjects such as privacy, data security and system conversion from one machine to another.

Our BSc and diploma students arrive from a variety of different backgrounds. Some have already worked in systems, and come to us to get an overall picture of systems analysis as against the single on-the-job view of it they already have. Others have been operators or programmers, and intend to become systems analysts. These all bring with them skills in data processing that are useful to others in the course.

A strong contingent will be converting from other fields. Accountants, lawyers, chemists, metallurgists, long-range planners from multinationals bring with them knowledge of organisations, and of professions other than DP. A third group have taken other courses in data processing, often a BSc or similar course in computer science. Technically, they have a

lot to offer. They tend to start off believing they know most of the answers, and finish by being far less confident of their omniscience.

As a bonus, we have contacts with a number of overseas companies, and members of their staff come to us to learn advanced systems analytical skills after a number of years in computing.

We begin our programme with a three-week, full-time Cobol course. Then follows the main course, during which students are introduced to the tools and methodologies used by system analysts, including subjects such as file design, flowcharting, operational research techniques, procedural languages, decision tables and structured systems design. They get to know about operating systems, database systems, online and real time systems, and microcomputers.

They use case studies to practise feasibility studies, fact finding and recording, systems design and documentation. They learn about the assessment of computer performance using simulation techniques, software and hardware monitors and benchmarks.

In short, we do all we can to ensure that they have the tools and the techniques to meet the challenges they will face in the field.

None of this would help if they lost sight of the purposes a computer installation is meant to serve. To meet this need, they study organisations and business management information needs, accounting and financial topics and

The proof of their success — and ours — is that students without prior experience are doing valuable jobs in bureaux, gas boards, consultancy firms and large user installations, while some have set up their own consultancies.

The more I see of their success, the more I believe that the greatest benefit we can confer is confidence, backed by sound knowledge. So many people in the DP industry have been forced to learn "on the job", with their horizons limited by one installation or one manufacturer, that well-educated people still stand out.

Our reward is to be asked, we recently were, "Can you find us five more as good as the two we have taken?"

Owen Hanson

## FOCUS

# Company fall-guy's fight for survival

THE DPM has long been urged to delegate his responsibilities to the interests of the installation and his own health. So successful has been his response that, in some cases, the DPM has almost delegated himself out of a job.

On his home ground, the system manager and communication specialist wield considerable power and influence inside and outside the computer installation. The end user now enjoys, along with his distributed processor, similar levels of power and responsibility.

Before long, senior company management could be joining the DP power game. Having achieved a reserved company car parking space, they will be claiming their right to an individual IBM or Digital Personal Computer. As a result, DP management could soon find themselves outnumbered, outvoted and, if they are not careful, out of the running in the corporate power game structure.

In many cases company management have been keen to put the DP team well and truly in place. And the place they have in mind is one limited to producing and maintaining the corporate database — processing and accessing the data being the sole responsibility of the end user.

Such corporate rejoicing, however, could turn out to be ephemeral. The DPM has become the accepted fall-guy for the entire company. Finding a replacement or substitute will not be easy. The DP operation has been a convenient target when top management are awarding blame for failure to meet targets or service objectives.

Taking the blame strain is not limited to the UK. A recent US management forum was told that the DP department is often the last to know of corporate plans and

discussions, but is still expected to react.

One major DP objective should be to delegate or bribe at least one company informed source to keep the computer section in touch with company plans and policies. Being told, for instance, on a Friday evening that the company will be dealing next week in convertible currency options or moving from buying-in pre-assembled components to in-house manufacture, and that the computer was expected to meet the new requirements, is even in IT Year, an impossible assignment.

When the company or computer chips are down, the DPM is in the front line. Should the night shift operators neglect to set the correct data line for the monthly invoice run, or input procedures screw the database file before security dumping has been completed, the DPM could well be in line for dumping procedures himself.

For the DPM, delegation is a worthy objective, but extremely hard to achieve. It is the responsibility of DP management to keep in touch with all developments and procedures which involve the DP team.

In any case, the aggrieved user would not be keen to accept a delegated DP victim. It is the DPM's head which is demanded; substitutes are not acceptable.

Much of the DPM problem arises from being set impossible tasks. The solution, according to the US forum, is to stop worrying. Instead of racing around trying to meet every impossible timescale, the DPM is advised to inform management and users on the problems and probable results of the project.

Alan Simpson

## HUMAN TOUCH

# A little help from the rule book

DURING his "two years' experience of programming" that turns a TOPS trainee into a sought-after commodity he or she must have learnt something. We find it difficult to believe that that something is anything other than their own set of rules.

The rules below are extracted from "The Programmer's Book of Rules" by Logan & Leslie, published by Lifetime Learning Publications ISBN 0-534-97993-8. Book learning is no substitute for experience, but certainly can help it on its way.

● Loops are an indispensable programming device, because repetition in some form is the fundamental reason behind most programs. However, don't risk the embarrassment of uncontrolled repetition.

● Break programs into groups of statements that can be tested and debugged apart from the rest of the program. In Algol, Pascal and PL/I, they are called blocks and procedures.

● Always label all your output. What makes sense to you now will be obscure later when you look at the program.

● Basic has convenient (but trivial) array manipulation facilities (the MAT statements). APL has powerful array (vector) handling features. Recursion is possible with the Algol, Pascal, and PL/I, as well as in LISP and SNOBOL. Some languages, such as Pascal, allow you to define your own data structures. Pick from among the languages available to you the one that best handles the data structures you need.

Cliff Dillmore

## DOWNTIME

# Diets tailor-made to suit

THE stomach should be one quarter full at breakfast, three-quarters full at lunchtime and half full at dinner. Such is the advice of Barbara Caldwell, a consultant nutritionist, who uses a computer to help diagnose the dietary ills of her clients. Her computer will also tailor a diet to the needs of every different metabolism.

"Biochemically, we are as individual as our fingerprints and we vary enormously in our specific nutritional needs," explains Caldwell.

She issues the following general directive: "Eat and drink only when hungry and thirsty."

Precisely what I have been doing all these years, my dear. As a result my trousers have always had to be tailor made.

Next step, the dirty postcard

THE technique of computer image enhancement has found a new application in the photographic reconstruction of Old Master paintings hidden beneath the paint layers of later and perhaps lesser works.

X-ray photographs of the hidden under-layers have for years been available to art historians, but they have not been clear enough to identify the painter responsible.

The computer will "purify" these images by eliminating elements present from the unwanted top layers and the underlying canvas or wood.

Exposure of these masked

paintings can prove rewarding indeed, as Chad himself once discovered. He was presented with a huge canvas on which was painted a cluster of mermaids basking on the shore of a tropical island. They were prettily clad in little woollen cardigans.

Unsatisfied with this state of affairs, Chad patiently and delicately chipped away at the mermaids' torsos using a mild paint remover.

When he had finished, the mermaids were naked as a candle flame.

The clothing had been painted on to appease the sensibilities of the Victorian drawing-room.

Sex-changer unsacked

GOOD news for those unhappy with their sex life. The sacking by GEC Telecommunications in Coventry of an engineer who decided to change sex from man to woman was ruled illegal by an industrial tribunal.

Following this important test case, the woman was reinstated by GEC with a vote of confidence from her fellow employees. A GEC statement described the original sacking as having been taken "after proper consideration."

10 YEARS AGO

From Computer Weekly of June 22, 1972...

GLC LEADER Sir Desmond Plummer switched on the latest phase of the Greater London Council's computerised traffic system, serving the Baker Street and Marylebone area... A new

dis file, the 8460, announced by Univac, was claimed to provide the largest storage capacity currently available. It could handle 2.2 million characters of storage online.

No comment — no story?

MEMBERS of the British Telecommunications Systems Committee set up to export Systems X set declining to comment on reports that the Department of Industry was withholding a £16 million grant to aid of further development of the system for export markets until the consortium reorganises its marketing effort. The DoI declined to confirm that such a grant had been applied for.

Plessey is pressing for changes in the marketing arrangements for its declines to give details, and British Telecom dismisses comparisons of Systems X with Concord on the grounds that development is ahead of schedule.

Of such declining, dismissal and rejections are news stories made.

Ahead of time

I HAVE often wondered why the logo used by the BBC for its churces on its teletext service, the fax, is not reproduced on itself. The reason is simply that it is not yet technically possible to reproduce it.

Loth to part with such an original piece of art, the BBC is waiting for the best of technology to bring the symbol into the real world.

# ComputerWeekly

Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS

Thursday, June 24, 1982

# The company that refused to die

IN the mid-Seventies, there was a standing joke in circulation that the initials ICL stood for "It Can't Last". At the time, the atmosphere within the company was one of complacent lethargy, and no one working there could believe that the cloistered calm would ever be shattered.

But the worldwide recession and the birth pangs of the 2900 range and its futuristic but unreliable operating system, VME/B, put an unaccustomed strain on the resources of the company. Not that there were insufficient competent technicians. Far from it — ICL has consistently been in the forefront of developments in both hardware and software.

The main problem facing ICL was a total lack of direction from above. In a company formed from the amalgamation of several others, there is always the risk of forces pulling in different directions. Was VME/B the way forward? Possibly not, so the less adventurous, but incompatible operating system VME/K was developed.

Pressure from the large 1900 series customer base forced ICL to provide continuing 1900 mode operation on the 2900 hardware, and users of the old English Electric System 4 also needed an emulator to enable their software to run on the new range.

□ □ □

ICL needed someone to give the order to advance in one direction rather than in four or five at once. But after managing director Geoff Cross left in 1978, the company lacked a suitable figurehead, and little guidance was forthcoming. Existing customers, faced with the prospect of upgrading to the completely new architecture of the 2900 series, saw the lack of direction. Many decided to move to other manufacturers' kit rather than face an uncertain future with a company which didn't seem to know where it was going.

Even within ICL it was not uncommon to find employees who had no idea who was running things from the ivory tower in Putney.

But you would be hard-pressed now to find any ICL workers who have not heard of Robb Wilmut and Sir Christopher Laidlaw. The new, slimmed-down ICL has one of the best management teams in the UK.

But at the beginning of 1981 the omens were not good. Last year 25% of the workforce was disposed of in what was seen at the time as the first death-throes of an expiring company.

The virtual cessation of peripheral manufacture was also seen as a sign of a company in decline, as ICL moved into "badge-engineering" in a big way.

But ICL has confounded the critics and refused to die. For the first time in its history, ICL seems to know where it is going — and that even includes going across the Atlantic to compete with the giants on their own ground.

With the first Atlas 10 sales shortly to be announced, reports of IBM concern are becoming more frequent. Any company which issues Press releases after it has lost a contract to ICL, and seeks High Court injunctions to stop a deal with ICL being signed, is a very worried company indeed.

□ □ □

City analysts typically predict that ICL will be in the black by more than £20 million at the end of its current financial year. The product line includes processors more powerful than anything IBM can offer, the much-derided VME operating system finally has its act together and devices such as the content addressable store and distributed array processor are technically a streets ahead of anything from most of the competition.

The company has not yet had to draw on the £200 million government loan guarantee, recently extended, and all the signs are good that the patient is well on the road to recovery. Chairman Laidlaw has been awarded his knighthood a year earlier than expected, and it is not usual to afford such honours on lame ducks.

Perhaps the mid 1980s will see a change to the old joke: It Can Last.

1984 and all that...

THIS week's example of the strange things people say about computers was sent in by Boris Allen, of Stockport, who wins £5. If you receive more than one envelope from us on the same day, it is a result of our data processing program. Hand sorting is more expensive than postage.

Message on back of envelope from Dutch publisher

## LETTERS

# Unfair to the south-west IBM and its reputation

DAVID CASEY's report (CW, June 3) purports to give a picture of four industrial development areas, one of those being the South-west. I was amazed that in his view the County of Avon and the South-west are synonymous.

To discount Devon and Cornwall in his final paragraphs in such a cavalier, naive fashion does no credit to him.

He alleges a disproportionate cost in journey times. The advent of the M5 to Exeter and the excellent dual-carriageway to Cornwall belie this (Exeter-London three hours, Plymouth-London four hours).

Excellent airport facilities at Plymouth and Exeter exist (1 1/4 hours and 55 minutes respectively) and the train service is admirable (3 1/4 hours and 2 1/2 hours).

To write-off the labour force as lacking the blend of necessary industrial and commercial skills is quite unjustified. The achievements of the educational establishments in this area in high technology are considerable and the environmental attraction to existing quality staff is undeniable.

At least 50 companies of different shapes and sizes involved in high technology, with my immediate knowledge, operate successfully within this county. They include AMP of Great Britain, Bideford; John Heathcoat/Focus Division, Tiverton; Holsworth Electronics, Holsworth; Plymsey Semiconductors (LSI) & Gyroscope, Texas Instruments, Teacemit Electronics, Plymouth; J & S Marine, Barnstaple, not to mention many who find Cornwall a worthwhile base for their operations.

His penultimate paragraph is quite irresponsible, in my view, and it is clear from the whole tenor of his article that his knowledge of the true industrial South-west is abysmal.

Why doesn't Mr Casey come and have a look?

D. HALL  
Industrial Development Officer  
Devon County Council  
Exeter

David Casey's references to Devon and Cornwall in his review of the South-west, were curiously due to shortage of space. — Editor.

I am sure many people in computing will be saddened, as I am, by the loss of a highly respected member of our community and of a very likeable colleague and friend.

E. J. HOWE  
Deputy Director  
National Computing Centre  
Manchester

# Tribute to a pioneer

I SHOULD be grateful if I might refer to the sudden death of J. R. Ellison.

Early in computing he was responsible for key work on the English Electric KDF9 computer, including design of the multiplier.

But perhaps Ray Ellison will be best known through his well-earned reputation as one of the leading national authorities on computing security. He contributed substantially to national awareness of the importance of this subject.

As a colleague I was very appreciative of his pioneering efforts from the early 1970s in an area in which interest always has to be developed by persuasive, knowledgeable effort.

Chess aid for disabled

YOU included an appeal by J. F. Caldwell of Netherton, Huddersfield, for some aid to chess playing. I should be grateful if you could pass on to him the following information:

I do know of a device which enables two players to make their own moves, though themselves not able to make any limb movement. Presumably, one player can thus play each in turn and so play against himself.

Congratulations on another successful Computarists and its promotion of many sports.

BRIAN WORRELL  
Honorary national publicity officer  
All England Netball Assoc.

A fair deal for our advertisers

No guesses, no wild thinking — our Circulation figures are independently audited to the strict standards required by the Audit Bureau of Circulations.

We're proud of our membership of ABC — especially in this its Golden Jubilee Year.

YOUR editorial, "IBM's reputation is at stake" (CW, June 3) may have misled your readers and I wish to remove possible confusion.

IBM United Kingdom Ltd has not announced the IBM Personal Computer for good business reasons. These are unchanged by the fact that a relatively small number of machines have been sold here by third party, without IBM approval or involvement.

Each dealer outlet in the US and Canada has been individually evaluated by IBM before being authorised, to ensure the highest standard of sales, support and service are available.

Wrong sport

SUE JONES from Data Logic is seen not under a basketball net (as stated in the caption) but a netball net with a size five netball (CW, May 27).

Many computer companies support netball teams for their female staff. Any that do not are invited to contact the All England Netball Association, Francis House, Francis Street, London SW1P 1DE or Tel No 01-828 2176 for details of how to start a netball team and their nearest league.

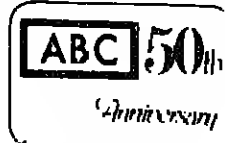
Recognised

HAVING recognised a Telegen barcode in your cartoon (CW, May 27), we were delighted to find it read perfectly. There was no hope of reading the EAN code, of course.

We confidently anticipate Computer Weekly will keep the next generation of robots amused!

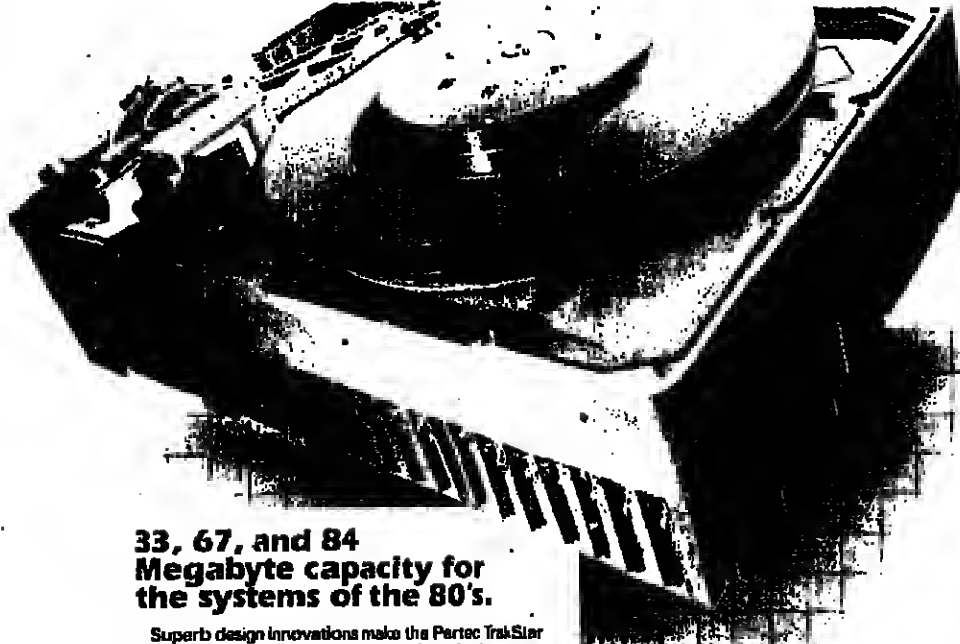
G. E. SIMS  
Managing Director  
SB Electronics Systems  
Harpenden, Herts.

The Editor welcomes letters commenting on subjects published in Computer Weekly, or on original topics. All letters must be accompanied by the writer's name and address, not necessarily for publication. Letters may be cut.



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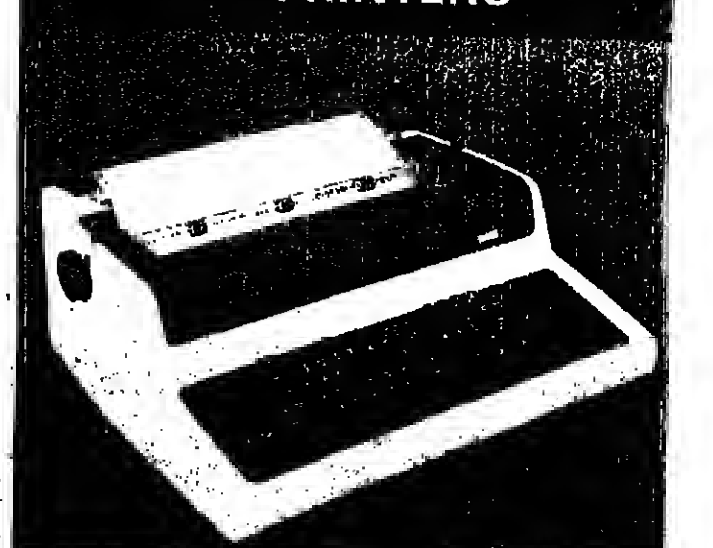
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## Liveware File

by Don

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...NOT SO MUCH IN MARSHALL McLuhan's.



ELECTRONIC VILLAGE



AS IN AN ELECTRONIC PLEASURABLE CIRCUS?









## PEOPLE

## Marketing chief for Star Group

COMPUTER manufacturer Star Computer Group has appointed Janine Blockley as marketing director. She is the first woman to attain such a high position in the company, having worked her way up from client account assistant in the company's computer section in seven years.

Following promotion into the sales department, she became area sales manager for London and the South, heading a team selling the Star Auditor range of small busi-

ness systems. During this period the company gained a quotation on the Unlisted Securities Market.

As marketing director she will be responsible for branches in London, Birmingham, Manchester, Liverpool, Newcastle-upon-Tyne and the West Country.

Blockley, aware that she has risen in a male-dominated area, says next year will be of major importance and she will be trying to push the company still further.

■ Richard Christensen has been elected vice-president, international sales, at Cyberex. Christensen, who will be based in the Netherlands, was previously manager of the Cyberex office in Veendam, Netherlands.

■ John Beutley has been appointed marketing manager at Sage One Computers. Dr. Peter Hartley, formerly with the department of mathematics and computing at Wolverhampton Polytechnic, has been appointed development director at Sage One Computers.

■ Sandy McLarea is promoted to distributor sales engineer at NEC Electronics. He joined the company six months ago to work in the customer services department.

■ Robin Bulmer has been appointed by EPS Consultants to set up and manage its new office in Glasgow. He was previously in sales and support with Comshare.

■ Sandy Helme has been appointed director and principal consultant at CT Computer Services. He was formerly a consultant with Arthur Andersen.

## Mercury sales boss

MERCURY Communication has named Stuart Bailey director of sales and marketing. The company was recently licensed by the government to operate a business-oriented telecommunications network based on fibre optic and radio links.

Bailey joins the company from Geisco, where he was marketing director, Northern Europe, for about a year. Before that he was UK sales director for the company. Before joining Geisco he held various general marketing positions with ADP.

■ David Crisp has been appointed senior systems analyst at Stanton Automation. He joins the company from Marconi's space and defence division.

■ Bernard Lovell has been appointed sales manager at Warrington-based Direct UK. He was previously in a similar job with H. H. Electronics.

■ Frank Owen has been appointed worldwide telecommunications manager at Texas Instruments. He previously managed the same function in Europe.



The bat Dexter is using was signed by last season's England and Australia sides and sold to Honeywell for £500 for charity.

## Cricket awards

IN conjunction with the Observer, Honeywell is offering England cricketers awards of port and Snodgrass for the best batting and bowling partnerships in each of the full-length Test Matches with India and Pakistan this summer. Another award at the end of the season will be for the best batting and best bowling partnerships of the six-match series.

Our picture shows former England captain Ted Dexter guarding a Honeywell DPS 6 minicomputer, which provides the BBC's cricket statistics service. With him are Honeywell engineers (left to right): Dave Palmer, Paul Armstrong and Tony Howard.

■ Jonathon Hessling has joined CTL as senior sales executive for East Anglia. He was previously an IBM salesman. John Wheatley has been appointed sales support manager. He joined the company in 1974 as support engineer and served latterly in the OEM division.

■ Terry Forde has been promoted from Modcomp sales manager, North European region, to European regional manager.

■ David Dawson, formerly sales engineer at Norgain Displays, has been appointed director of the company.

■ Kim Chalmers and Kevin Payne have joined Nixdorf Computers as sales executives. Chalmers, a senior sales executive covering the South and West of England, joins the company from ICL. Payne will work in the Birmingham office. He joins from Adroit Systems.

■ Barrie Patman has been appointed UK software sales manager at Deltan Conversions. He was previously with Cincom Systems based in Maidenhead.

■ David Gardner, chairman of the Electronic and Engineering Association (EEA) contracts and advisory committee and chairman of the CBI's contract panel, has been appointed director of the association. He is contracts controller at Philips Electronic and Associated Industries.

■ Arthur Lock has joined Axiom Electronics as senior sales engineer. He was previously senior sales engineer at VSI Electronics.

■ Steve Dowls has been appointed system support analyst at Systems Resources. He joins from Gratton where he was senior systems programmer.

■ John Bellamy and Owen Hill have been appointed joint managing directors of Insight Marketing and Personnel Consultants. Bellamy, formerly main board director with ADS, will cover the Midlands and South England. Owen, who manages the Leeds operation, joined IMPC from Olivetti in 1980.

■ Richard McGins has been named regional director, European AT&T International. McGins joined parent company Bell in 1969 as an account executive.

■ John Smith has been appointed general manager at LMR Computer Services. He was previously customer services manager at Onix Computers.

■ Alan Stone has been appointed area sales manager for the Midlands and West England at EPO Electronics. He was formerly senior sales engineer at Plessey Computers.

## DIARY

**JUNE 27-JULY 2**  
Computer-aided design of filter networks. Second IBE vacation school at University of Essex. Details IBE, 01-240 1871.

**JUNE 28**  
Local area networks. BCS WP&OA SE branch. United Reform Church, Small Hall, Addiscombe Grove, Croydon. Details Sandy Hathaway 66-35925.

**JULY 24**  
Decision making in general practice. AGM. BCS Primary Care Group Society, St Peter's College, Oxford. Details Dr Geoff Dove 01-385 7776.

**JULY 6**  
Briefing expert systems. Edward Feigenbaum. BCS Expert Systems Group/SPL. Royal Garden Hotel, London. Details SPL Fifth Generation Computer Project 0235 24112.

**JULY 6-9**  
Man/machine systems, international conference. BCS/IBS, UMIST, Manchester. Details IBS 01-240 1871.

## CONFERENCES

■ A SEMINAR for independent computer consultants will be held by I. P. Sharp at its European head office in Buckingham Palace Road, London, on July 2. The seminar aims to provide consultants with an opportunity to investigate the new features which have been added to the company's APL time sharing service. The company intends to hold these seminars at six-monthly intervals. Guest speaker at the July seminar is Ian Sharp, the company's founder. Admission is free. Details from Margaret Joachim 00 01-730 4567.

■ THE key to beating Japan in manufacturing is the theme of the

**JULY 7-9**  
Second British national conference on databases. BNCOD-3. BCS/Universities of Aberdeen and Bristol. Bristol University. Details Dr M. J. R. Shave 0272 24161 ext 846 (mornings).

**JULY 7-9**  
Fifth generation international conference. BCS Expert Systems Group/SPL. Royal Garden Hotel, London. Details SPL 0235 24112.

**JULY 8-9**  
A calculus of communicating systems. BCS FACS Group. Queen Margaret Hall, University of Glasgow.

**JULY 15**  
Auditors' brains trust. EDP Auditors' Association. Little Ship Club, Bell Wharf Lane, Upper Thames Street, London EC1 5.00.

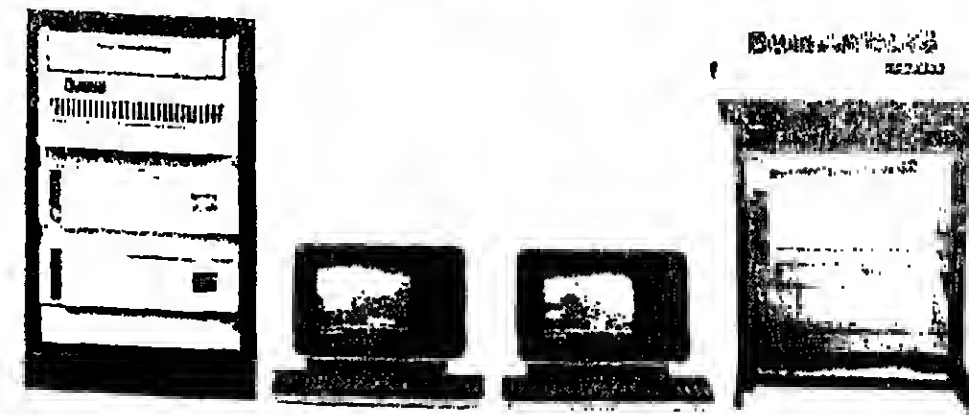
**JULY 20**  
Information systems in health care. BCS Medical Group and Sussex Microcomputer Society. Details Dr Geoff Dove 01-385 7776.

**JULY 26-28**  
Electronic image processing, international conference. IBE. University of York. Details IBS 01-240 1871.

British Production and Inventory Control Society - PA Management Consultants conference. Changing Manufacturing Strategy in the West. It will be held at the Royal Garden Hotel in London on July 6 and aims to interpret Japanese methods of manufacturing into a form which is practical for exploitation by Western companies. The conference is aimed at middle and senior manufacturing management and will include a visit to a manufacturing plant on a process technology (unpublished) information technology and organisation and management style. Details from BPCS 0279 723554.

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# Invest in micros – it's the best way to beat the recession

KENNETH BAKER, Minister for Information Technology, has told industrialists so often that they must either "Automate or liquidate" that there are now signs he is being listened to.

In order to put money where his mouth is, Microprocessor Application Projects (MAP), funded from the Department of Industry, have survived numerous government cuts, and are now in far better financial shape than almost any other part of the public sector save defence and law and order.

The Department of Industry reports that it has far more money to invest than schemes to invest in. The response from the computer industry, among others, has not been big enough to mop up the grants that they would like to make.

One of the branches of manufacturing where the application of microprocessors is most likely to prove economic is the plastics industry. Here, in an attempt to increase the take of MAP money, the British Plastics Federation has joined forces with the DoI to produce a combined initiative.

They have jointly spent some 18 months touring the country putting on seminars and exhibitions which show the financial benefits of using microprocessors either in direct manufacture or part of a control system or as microproces-

sor-based computers to administer a production unit.

Their success has been considerable and the DoI is now in the process of trying to launch similar initiatives with other industries including knitwear, engineering and footwear.

The dependence on the computer industry for each aspect of manufacturing industry liaison is important, as all the schemes require a substantial computer consultancy commitment. Each successful MAP application is applied in the company as one or more of three parts which are:

Part A: A preliminary phase in which computer consultants provide microprocessor awareness and training in how to use chips. This is done either independently or along the lines of the seminars and exhibitions that the plastics/DoI people have been running. Figure 1 shows how necessary this part is.

Part B: Having had some of its staff trained in microprocessors, the company may wish to consider installing a computer that will be linked to its manufacturing plant in some way.

Part C: This is the most important part for the computer industry and it is also the part which has been allocated the most DoI fin-

ance. In addition, this is where there has been the smallest response when compared with the money that is on offer. This part is the project support phase where development grants are made available. At the end of 1981 more than 600 projects in all parts of UK manufacturing had received approval, and about £24 million had been committed on grant expenditure to them. Since then even more money has been allocated to this part of the scheme.

	Commitment (£m)	Spend (£m)
Part A	11.32	9.34
Part B	5.25	3.57
Part C	27.90	10.44
	44.47	23.35

A further £11 million, making a total commitment of some £55 million is being made available before April 1983.

Like the curate's-egg, the scheme has its good points; some two-thirds of companies which ac-



high-technology companies (see Figure 2) – the "It's OK for IBM but not us" argument.

Many MAPs that have been completed show that both criticisms can be false. The consultants received their grant without undue fuss and companies with a very small payroll and annual turnover have now acquired microprocessors on the factory floor as a result of MAP. At the moment one new development project is submitted by computer consultants to the DoI every day of the year and the signs are that that rate is rising.

Before the MAP scheme gath-

ered on the mainframe. The company reports production improvements on nearly all fronts – a fivefold reduction in unscheduled machine downtime, much less material wastage (down by 30%) and prolonged component life because the machines are running under near optimum conditions.

It has installed a second separate computer on the shopfloor. This is a Pet and is connected to a conveyor where the finished goods are packed. Healey's employs two people instead of six on this work for the same throughput, and now the Pet counts the correct quantities for each carton, prints the customer's address if it is to be sent to a regular customer and provides full despatch details to enable the invoicing department to bill them.

In addition comprehensive transport details are produced and so transport is rendered more economic than previously.

As pioneers, Healey was unable to benefit from MAP, but is collaborating fully with its publicity. ICI is experimenting with robots on a substantial scale and in its Plastics Division at Hillhouse, Fleetwood is conducting tests on a Unimate 4000 robot that also has to earn its living. It is employed to palletise 25kg bags of a PVC raw material called Corvic in a dusty environment at the rate of some 9 tonnes/hour. It picks bags alternately from two conveyors, lifts its own guard when there are 40 bags on the pallet and pushes the pallet out into the corridor so that a fork-lift truck (driven by a human being) can load the pallet into the stores.

Programming in this example is

Plastics firms are experimenting with robots on a substantial scale in their battle for survival. Chancellor of the Exchequer Sir Geoffrey Howe was also persuaded to swap his calculator for a robot control keypad on an official visit last week to the factory of Dainichi-Sytek Robotics in Preston.

considered an unskilled job because the programmer merely had to drive the robot's arm by remote manual means and while that is done the robot writes away to its memory key points in the path that it has just followed. When it needs to carry out that movement in practice it follows exactly the same path except that any superfluous movements that may have been included will automatically be left out.

British Industrial Plastics used to employ 35 people at its IP20 Department at Streatham in the West Midlands, to manufacture polypropylene sweet containers that can be used as construction toys when they are emptied. It used several micros on its shop floor including Lucas Logic EMU data collection terminals which were connected to DEC hardware but despite investing in advanced manufacturing techniques, it was closed down at the end of 1981.

The British Plastics Federation reports that there have been significant redundancies over the last year or two due to all causes among its members. But, despite estimates suggesting redundancies as high as 30%, there does seem to be a widely held view that unless member companies adopt more advanced manufacturing techniques, the level will rise even higher. This view is supported by a nationwide survey\* of UK manufacturing which shows that there is a net gain in establishments that install micros of 16,000 jobs and a net loss in the months following their installation of 14,000 jobs.

Another initiative that has taken place is the establishment of a research fellowship which is funded jointly by the plastics industry and the Science and Engineering Research Council. This work is still in its early stages but it confirms the suggestion that organisations which have invested in micros and the like have survived the recession much better than those that have not.

\*Microelectronics in Industry: What's happening in Britain, by Jim Benwell with Paul Rogers. Published by the Policy Studies Institute in 1982, £5.

Nicholas Benwell is on the staff of the Cranfield Institute of Technology, School of Production Studies.

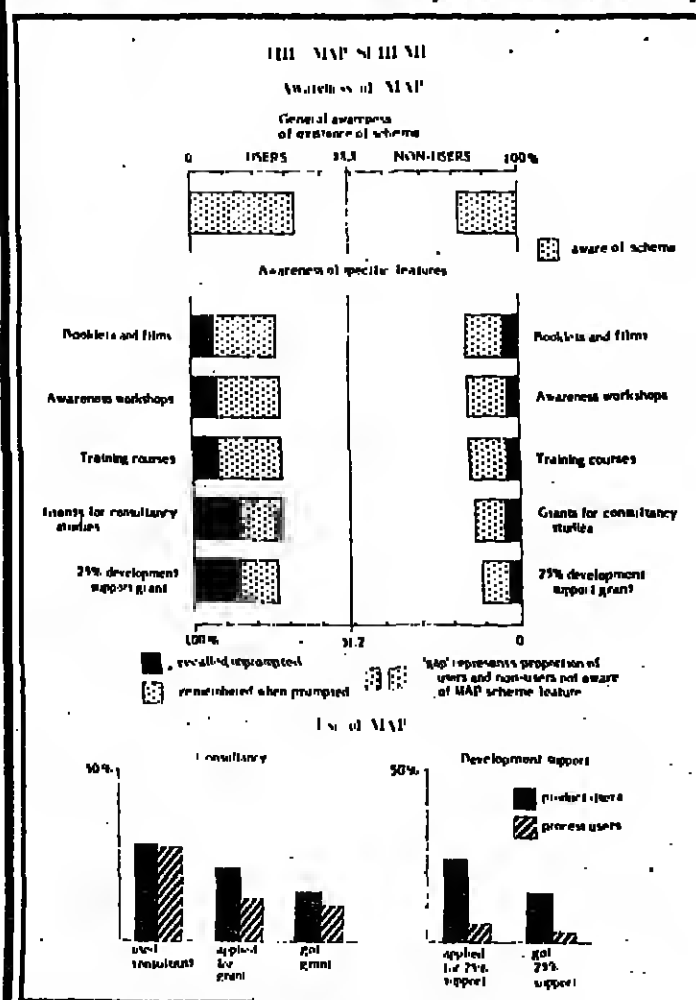


Figure 1: The extent of awareness of the MAP scheme.

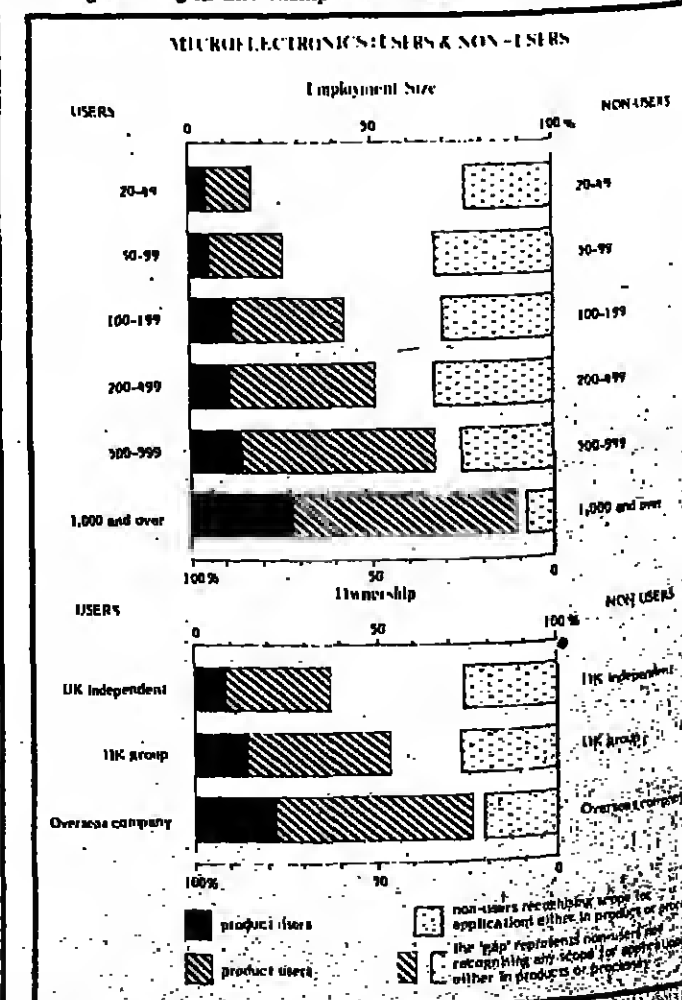


Figure 2: The size of companies that use new technology.

## BOOKS

### Electronic office benefits in doubt

The Electronic Office, A Management Guide to the Office of the Future. Dennis Jarrett. Gower with Phillips Business Systems. £12.50.

SOME modern developments seem to occur in an effective manner and as a natural application of new ideas, bringing about considerable change with a minimum of fuss; others give rise to a flurry of publicity.

In the office environment, document copying is an example of the former and the electronic office a case of the latter, despite the fact that a lot of its applications still have to be resolved.

This book is published as part of Information Technology Year 1982 publicity material. A management guide bearing a foreword by a Minister of State and written

by a journalist should be authoritative, helpful to managers and easy to read. Unfortunately, I found it disconcerting to have to deal with the summaries and key points (blue panels) concurrently with the normal text.

The text provides a useful and extensive discussion of the background of the electronic office and the concepts thereof. It covers systems such as microprocessors, information storage, local networks, telephones, viewdata and other modern office applications, and the author clearly has an extensive knowledge of his subject.

Managers looking for help will find little assistance in deciding the type of equipment that will be advantageous to the business, or in selection criteria for suitable



equipment and software, despite the potentials and problems having been discussed comprehensively.

To say "it has not been possible to identify precisely the extent to those benefits" is right, but the business manager will need to be assured of certain minima before embarking on this type of change and investment.

A. J. Thomas

### Signposting to a mass of software

International Directory of Software 1982-1983. Computing Publications Ltd. VNU Business Publications, 55 Frith St, London W1. £48.

THIS publication makes it very difficult not to find what you are looking for. Of the many directories on the market it is probably the most comprehensive – certainly it is a masterpiece of indexing, cross-referencing and signposting through the mass of software products and companies offering their wares.

The 1982 Software Directory sticks closely to the format already well-established and proved with previous issues and the forerunner Computer Users Yearbook of hardware products. There are sections dealing with the products themselves, split into separate

categories, indexes dealing with industry-specific products and products by category, followed by detailed profiles of suppliers, and for those who already know what they want by name, a quick-reference index of named products with page number.

This arrangement allows some-one searching for a product or a range of products, or even a software house specialising in certain fields, to find a reliable route around the mass of products now available. It is noticeable that the book is almost as thick as its hardware sister guide.

Nevertheless there are a few omissions – perhaps inevitable in a fast-moving industry – and a strong bias towards US companies in the list of suppliers at the back. One innovation in a separate sec-

tion on microsoftware, sorely needed in that fastest-moving of software industries.

The introduction and explanation on how to use the directory is clear without being wordy, and repeated in French and German. The categorisation itself is very easy to follow, although there is some inevitable overlap, especially in the systems software field.

A consistently good feature of the directory is its layout. Liberal use of page headings, capitals, bold type, and blank spaces rather than unbroken seas of type, makes it easy to find particular features at a glance. The detailed section on products is set out in a very designed to make comparisons simple.

Claire Gooding

## Taking the guesswork out of forecasting sales

Electronics: The Market and Technology to 1985. Peter Evison. Casebook Ltd. 183pp. £95.

EVEN for those closely involved in the electronic marketplace, forecasting future sales, trends and development would be regarded as an enterprise to be approached with considerable hesitation, caution and finger-crossing. The approach of this book, however, is far from that of wishful thinking or guesswork.

Behind the comprehensive lists and tables is much research, statistical analysis and a broad understanding of what each and every electronic product does, including limitations. The product editorial which accompanies each review amply demonstrates the author's grasp of the electronic marketplace.

The volume has little hesitation in nominating computer DP equipment as being in the best marketing category. Within this area, electronic data storage has

the highest indicated average growth up to 1985, closely followed by the small computer.

At the other end of the growth table, data acquisition equipment and large/medium computers are forecast to have a relatively slow growth pattern. The fascination of such publications lies in following through the assorted tables. Analysis of electronic data storage, for instance, reveals that whereas magnetic disc sales will be double those of magnetic tape in cost terms by the end of the review period, the standard teleprinter is giving way to the more flexible video display terminal.

The section casts doubt on progress of bubble technology and suggests that from 1985 onwards yet another data storage technology, based on the application of "superconductivity" effects at low temperatures, may begin to compete commercially.

Surprisingly perhaps, the review

suggests that the public are not keenly supporting the introduction of PoS systems into the shopping centre.

Similarly, there is some public resistance to the further introduction by the banks of highly efficient cash terminals which can automatically record credit transfers. But the report makes clear that providing those involved in the marketplace have hit the right time and the right price, there is an outstanding potential.

On the domestic front, the book reveals that the sales growth leaguelike will be headed by electronic games and microwave ovens. Trailing this particular sector will be personal calculators (sales saturation having been reached) and home audio.

Other items of note include the near vertical growth rate for missile and space system electronics and cruise missile products.

Alan Simpson

### This book is worth queueing for!

Queueing Theory: A Problem Solving Approach. Leonard Gorney. Pergamon Books, New York. £17.00.

THIS well laid out book, generously illustrated with worked examples, sample programs and graphs, successfully animates a subject often buried in the stodge of academia.

I take issue with the author on one point only: his claim that readers who lack the required mathematical training will be able to pick it up from the earlier chapters which deal with probability theory.

I doubt it. The material is well explained for someone with A level mathematics, but a reader unfamiliar with algebraic notation and the abstract thinking of probability theory had better take the fundamentals for granted and concentrate on writing programs from established formulas.

Numerical examples for solution by hand are supplied with answers to test understanding of the formulas involved.

One especially delightful example concerns a petrol pump with an average five people arriving each hour taking six minutes to

fill the tank. A simple application of the relevant formulae tells us that the traffic intensity is 0.5, and there are on average one person in the system at any time (either being served or waiting), half a person in the queue and queueing time of six minutes for each person arriving.

People who spend a lot of time in queues need never again be bored after digesting the guts of this book. They will instead be busy juggling the queue about in their heads to make it shorter.

Philip Hunter

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\*All references to DEC and/or VT100 are made in full acknowledgement of DEC and VT100 being registered trademarks of the Digital Equipment Corporation.

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## PRODUCTS - 1

## Low-cost approach to address list production

THE LMS35 computerised list management system, launched by the Business Equipment Division of Bell & Howell, is a low-cost approach to address list production and handling.

Designed for the mailrooms of low to medium volume users, the LMS35 offers two advantages over conventional approaches. First, the computer's software program was written and developed by mailing and addressing specialists and second, the total system is available for what is claimed to be about half the cost of comparable systems.

At an all-inclusive price of £4,400, the LMS35 list management system comprises a 48K Apple II microcomputer with visual display unit, keyboard, two disc drives, a Centronics 150 characters per second matrix printer, work station unit, the software program plus comprehensive operator training and an operator's manual.

Information is entered on to the



The LMS computerised list management system.

LMS35's file disc through the keyboard and the operator is led through the process by simple English-language "menu" system that appears on the screen, showing such choices as "Create a list", "Update a list", and "Print a list". There is also a "Help" key if the operator gets into difficulty.

A major feature of the LMS35 system is the way in which very long lists can be merged and transferred from one disc to another to obviate the problem of running out

of storage space. When the disc is full (approx. 1,000 addresses) an instruction appears on the screen telling the operator to "copy" the disc.

The LMS35's sort feature is based on an "Identification field code" with up to 39 alphanumeric characters, entered at the same time as the name and address.

Bell & Howell (CW), 33-35 Woodthorpe Road, Ashford, Middlesex. Tel: Ashford (07842) 51234.

## Cutting out need for different tape drives

NAMED Gemini for its twin-mode capabilities, PCML's DMF-1000 is said to virtually eliminate the need for two different tape drives in a computer room.

Until now, data processing managers have had to use one transport to load and unload discs and another for start-stop transactions. PCML says it can now provide a single source for both functions.

"Current streaming tape products, while inexpensive, are also grossly inefficient for any use other than backing up disc data," PCML director Miles Miller said. "Their transaction speeds are pitifully slow, and at high speeds they become incapable of repositioning the tape quickly enough following write errors to match the flow rates of data."

PCML claims that the DMF-1000 Gemini solves both problems. For the day-to-day transactions of a computer room, the

Gemini operates at 45 inches per second.

In the streaming mode, the Gemini operates at 125 inches per second and constantly monitors the data rate for any mismatch with Winchester or SMD disks. If such a mismatch exists, the drive automatically retracts to its 45 ips transaction pace for increased efficiency. There it awaits either a software command or manual front panel switching to resume back-up speed.

Components such as hard-faced read/write heads for longer life, high-performance servos and mechanically isolated elements are combined to obtain optimum performance throughout the speed range.

Peripherals Computers Memories and Leasing (CW), MCP Division, 51 High Street, Esher, Surrey, KT10 9RQ. Tel: (0372) 67282.



The Model IS502 guillotine.

## Guillotines from Italy

A NEW range of continuous forms handling equipment manufactured by Italystem of Milan, has been introduced by Computermall.

A choice of two guillotines is offered. The first, the Model IS502 has variable speeds up to 15,000 4-inch forms per hour and three blade cutting system for single or multipart sets with pre-selection cut forms counter.

The second machine is the Model IS504 with fixed speed and two-blade cutting system.

Computermall (CW), My Place, Basildon Road, Basildon, Essex. Tel: (0256) 62444.

## PRODUCTS - 2

## BT launches telex terminal with visual text display

A MICROPROCESSOR controlled telex terminal with a visual display screen as well as a conventional printer has been launched by British Telecom for the public telex network.

Called the Cheetah, it augments BT's new generation of electronic teleprinters. Facilities include off-line message preparation, where outgoing messages are typed into an electronic store and presented to the operator on the visual display screen, while the teleprinter can continue to receive incoming messages or transmit other outgoing messages without interrupting the operator's work.

Operators can insert, correct or delete parts of messages entered from the keyboard or from paper tape into store, and text is automatically closed up to eliminate gaps. "Word wrap" allows operators to type freely disregarding ends of lines; the text is automatically adjusted to avoid split words.

Stored messages can be transmitted at pre-set times without further operator action. If the distant machine is busy, Cheetah makes a number of further attempts. The same message can also be sent to many destinations.

Up to 16 telex numbers can be stored in Cheetah's memory, and called automatically in response to a one-character code. The codes can also be used in automatic operation.

The Cheetah can be supplied with a memory of 16,000 or 32,000 characters, equivalent to 2,250 or 4,500 words.

The new teleprinter is being supplied initially in Telecom's London and Midlands regions and will become available elsewhere in the UK later in the year. It costs £2,380 (£2,560 with 32K memory) plus an installation charge of £120 and a quarterly rental of £45. Prices exclude VAT.

British Telecom (CW), 2-12 Gresham Street, London EC2 7AG. Tel: 01-357 3814.

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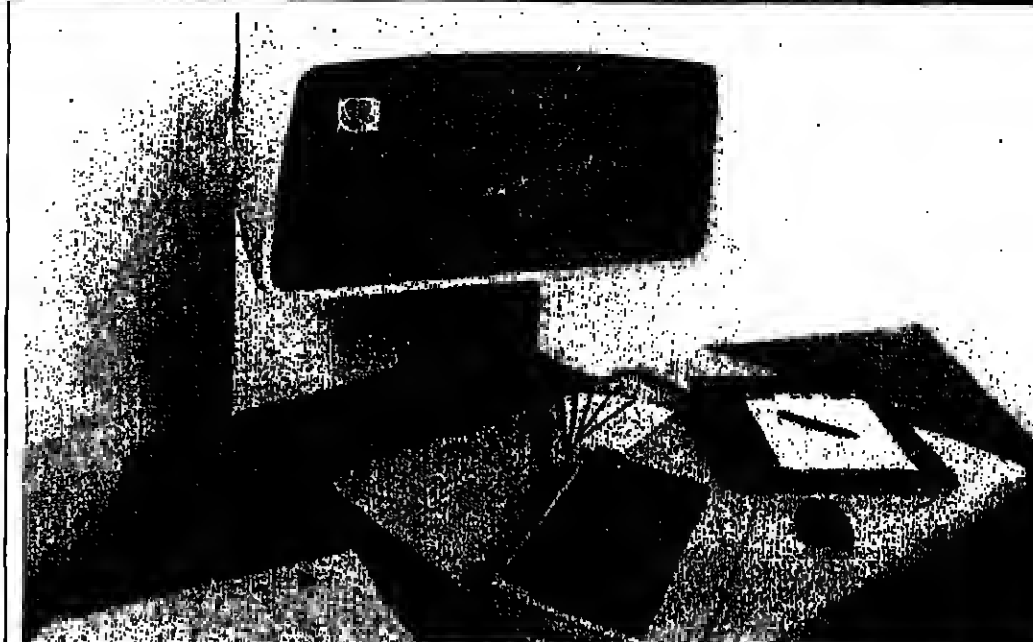
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Control Data's ergonomic workstation.

## Ergonomic CAD/CAM workstation

CONTROL Data's ergonomic workstation (EWS) enables engineers and designers to use CAD/CAM programs. It has a display which the operator can adjust to any suitable position by remote control.

Two modes of operation are

available on the EWS: Native Mode utilising Control Data CD2000 design and draughting software, and 40IX emulation allowing programs written for Tektronix 40IX equipment to be used.

The EWS has dual screens

mounted in the CRT enclosure. The graphics display screen is a high resolution 25 inch CRT with 4K x 3K pixels.

Control Data (CW), 179-199 Shaftesbury Avenue, London WC2. Tel: 01-240 3400.

## Text store for Sigma series

SIGMA Electronics Systems has introduced a text store module for the company's Series 5000 range of high resolution raster graphics terminals and OEM generators. The single board module can hold four pages of text.

Text store modules are interchangeable with pixel stores, allowing the user to configure a terminal or generator with the graphics/text mix to suit the application. Previously users have had to use up pixel store for text display tasks.

The module holds one page of scrolling text store for system interaction and three pages of cursor addressable text for tabular information display. This allows an alphanumeric display to be updated. The facility is useful in control and monitoring applications in addition to the standard applications such as part lists in a CAD/CAM environment.

Sigma Electronics Systems (CW), Sigma House, North Heath Lane, Horsham, Sussex RH12 4UZ. Tel: Horsham (0403) 50445.

## Announcing...

## COMPEC SCOTLAND

## ... Scotland's own professional computer show.

The highly successful Compec exhibition of computers, systems, peripherals and software is to be held in Scotland for the first time this year.

Compec Scotland in Glasgow between September 7-9, 1982 will allow companies selling into this important market to focus on computer users throughout the country.

Surveys of visitors to computer exhibitions demonstrate that users prefer to attend a show which is local to them. Compec North was enthusiastically welcomed in Manchester last year, and has expanded for the 1982 event in June.

Now Compec Scotland with a venue in the centre of Glasgow ensures a place at the heart of another key market.

For information about exhibiting at Compec Scotland contact Chris Timmins, Executive Director, IPC Exhibitions on 01-643 8040 Ext 4869. Or clip the coupon.

Please send me details of exhibiting at Compec Scotland.

Name

Job title

Company

Address

Signed

Tel

Return to: Chris Timmins, Executive Director, IPC Exhibitions, Surrey House, Throley Way, Sutton, Surrey SM1 4QG.

## Making computer staff more comfortable

BASELINE is a new range of ergonomically designed office furniture for use with computer peripherals, word processors and data processing terminals. It comes from W. H. Deane of High Wycombe.

Matching form to function, every item in the range of desks, tables, work platforms, shelves and pedestals is available in teak, mahogany or beech real wood finishes, all with hardwood rounded edging for durability and style.

Richard Yates, general sales manager for W. H. Deane says: "The rapid adoption of minicomputers and word processors in all

## Daisy wheel printer costs 'halved'

MARKING its entry to the data and word processing markets, the Smith-Corona Group of SCM Corporation has introduced a full character daisy wheel printer that it claims, retails for about half the price of other daisy wheel printers.

The company designed its new text printer, the Smith-Corona TP-1, to be compatible with major desktop microcomputer systems, and word processing systems.

In addition to being microprocessor controlled, TP-1 is compact, lightweight and has a small footprint, allowing it to fit in places where some printers cannot.

Delivering a quality printout of fully formed characters at more than 140 words per minute, the TP-1 is available in two basic versions: a 10-pitch, which gives a 10 character line; or a 12-pitch version, which provides a printable line length of 126 characters. Two standard interfaces are available, a Centronics compatible parallel interface and an RS232C serial interface.

The TP-1 offers what is said to be an easy system of loading ribbon cassettes; a low cost, daisy wheel printer rather than single element ball or cylindrical printer; an auto-tensioning system which enables the printer to under-drive margin settings which allows the user to set and/or release margins under program control.

Smith-Corona (CW), SCM House, North Circular Road, Stonebridge Park, London NW10 7ES.



One of Datacore Business Systems' fire resistant safes.

## Protecting microfilm

ALTHOUGH microfilm has many benefits in terms of space-saving and easy access, it is easily damaged, particularly by heat. While paper ignites at a temperature of 350°F, microfilm can be damaged beyond repair at less than half that temperature.

With this danger in mind, Datacore Business Systems has launched a new range of fire-resistant safes designed to store safely all kinds of microfilm media.

There are six sizes of safe available and a wide choice of modular internal fittings, allowing the secure storage of any mix of microfiche, jackets or roll film. Each model is designed to protect the contents for up to two hours from external temperatures of 1000°C, and all have passed independent laboratory tests in Europe and the US.

Datacore Business Systems (CW), 7 Wine Office Court, London EC4A 3BY. Tel: 01-583 2211.

## Uninterruptible power supply is portable

COMPEC Systems has developed a portable uninterruptible power supply and regulator (UPSAR) for computer systems and other equipment where a stable and continuous power supply is needed.

UPSAR, a solid state device, generates a clean 240 volts 50Hz sine wave electricity supply that is independent of the mains electricity supply, giving a continuous spike free, solid foundation to any computer system. It can be used with mains input voltages from 0-270 volts ac at frequencies from 40 Hz to 70 Hz, and output voltages from 110 volts to 240 volts.

Voltage stability on the output is within +/- 1% from no load to full load, frequency stability is +/- 0.1% and total harmonic distortion is 2%.

The device incorporates internal maintenance-free batteries which provide the system with the necessary electricity in the event of



Hytec H4512 with 12 Mbytes hard disc.

## Unit has fitted disc

A WORKSTATION which can be fitted with either a five Mbytes (H4502) or 12 Mbytes (H4512) integrated Winchester hard disc and additional half or one Mbyte of floppy disc is available from Hytec. Both are ICL-compatible.

The workstation is a complete unit containing the fixed disc as a sealed unit in addition to a standard floppy disc drive. This works out about £1,000 cheaper than buying terminal and hard disc system separately, claims Hytec.

The advantage of the integrated

hard disc system over a conventional terminal and peripheral is that it provides the operator with easily accessible storage, says the company. The floppy disc drive may be also used conventionally for back-up.

Hytec is presently working on the development of a 25 Mbyte and 45 Mbyte integrated terminal which should be available towards the end of the year.

Hytec Microsystems (CW), 9 West Way, Oxford, OX2 0JB. Tel: (0845) 926445/6.

## Plessey. The big name that could be selling for you.



Plessey small business computers are the ones with the big - and growing - reputation.

Plessey adds more value to DEC-compatibles. We've got the right products - with more features - at lower prices. With engineering and software back-up as good as you'll find anywhere.

Right now we're looking for distributors to share in our success. Interested? Return the coupon and we'll be in touch with all the details.

Plessey Peripheral Systems Limited, 3 Harrowden Road, Brackmills Northampton, United Kingdom NN4 0FB. Telephone: Northampton (0604) 65151 Telex: 312254

## PLESSEY PERIPHERAL SYSTEMS

Post to: Steve King, Plessey Peripheral Systems Limited, 3 Harrowden Road, Brackmills, Northampton, United Kingdom NN4 0FB.

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Kicking off our four-page feature, David Henson debunks some of the high-faluting claims that are being made

RARELY does one see a business paper nowadays without a reference to "The Electronic Office", "The Office of the Future" or "The Paperless Office".

The last of these hackneyed phrases is quite clearly meaningless. No one in the foreseeable future would take down a telephone message on anything else but a scrap of paper or go to a meeting without paper-written minutes in his hand. And any office in 1984 will be an "Office of the Future" viewed from 1982.

Of course more electronic equipment will appear in more offices - most of it an electronic manifestation of existing time-proven apparatus. The abacus, although it never assumed the importance in the West that it did in the Orient, was a marvelous technological development. Its calculating function has gradually been taken over by mechanical, then electro-mechanical and now electronic devices.

There has always been a need in offices for document duplication. Poor old Bob Cratchit had to copy letters in longhand; as many copies as Scrooge demanded. Along came carbon paper (the office aid par excellence); then the electro-mechanical copier and now the high-speed, programmable machine.

Similarly, the acceptability of word processors has been due to their elimination of a nasty office chore - typing the same old form or letter over and over again.

Far too many high-faluting devices, especially in data communications, suggest a radical change in the office environment is necessary.

For example: an export manager talking into a tube in his office (which happens in the sitting-room) to his secretary seated in front of a VDU (which happens to be in her bed-sitting room) who immediately prepares copy electronically, scans it for errors, returns to her boss for checking and electronic signing, distributes copies as directed and files in a memory bank.

The secretary then checks the FT index on the screen, selects the important changes, alerts her boss (still at home), communicates via VDU with the stockbroker... it's a scenario that just won't happen but, my word, a lot of nonsense about "The Office of the Future" is rather like it.

Remember the attempt in Japan years ago to persuade home viewers to read a newspaper on a TV screen in their living-room? It failed because the electronic

# Forget the 'Paperless Office': it just isn't going to happen

"jump" was far too radical. It is an essential educational principle to move from the known to the unknown; similarly office workers will not accept an innovation which appears to them unconnected with well-tried techniques.

Currently inter-office communication is dominated by three different media, each serving its purpose well: post, telephone and telex. Obviously all these have their disadvantages and I suggest that a fertile, acceptable field for electronic innovation is to help remove irritations rather than dash into the expensive unknown.

Letter post is a marvelous method of communicating. It's user friendly; there are an enormous number of input points, size and contents of message can be determined by the user and it relies on skills universally taught to every six-year-old and which once learnt, are rarely forgotten.

What is more, there is no need for a universal language - two Chinese people in Cornwall can communicate in Mandarin via letter post if they have a few English address labels. How many electronic communications systems can boast all this?

However, the post is too slow for many business purposes; if competitors use motor cycle delivery for the day's returns you must try to go one better. Post goes to place rather than a person and, greatest disadvantage of all nowadays, it is much too expensive; not so much the cost of a stamp but the time consuming business of document preparation.

Electronic mail, if it is to have any validity at all, must address itself to this problem. It's not electronic speed-up but, unlike letter post, there is no hard copy, and it is a system that needs planning.

The telephone, too, is an excellent instrument. Nothing is so interactive and there is an enormous installed user base but, unlike letter post, there is no hard copy, and it is a system that needs planning.

There must be enough lines to accommodate users, and the service cannot be used for worldwide



Is the post user-friendly?

communication without checking time zones. Here, of course, the electronic mail-box - operating on the good old principle of improving the extant, the proven, the acceptable - has already made good progress.

But, like letter post, telephones are expensive. One import-export company estimates that telephone bills now account for 28% of office costs.

Telex has the great advantage over telephone of being able to deliver hard copy messages unattended, out-of-hours, so it is excellent for international inter-time zone communications.

However, it is only found in business circles, and there are serious technical disadvantages. It

can take hours to prepare a longish message, error detection and recovery is bad, restricted character sets (capitals only) limit sophisticated use, and document width may not exceed more than 65 characters a line.

But the most irritating aspect of the triad of post, telephone and telex is that until recently they were all controlled by one godhead in this country. And in most of the rest of the world a single authority, the national PTT, remains responsible for all three. Thus, no inter-service competition and no incentive to produce more reliable services.

Electronics is not going to replace post, telephone and telex for the dissemination of information.

But there is not much doubt all three can be improved, and in a few limited cases cost-effective alternatives supplied.

Communications, of which data communications is merely one variety, is concerned with shifting blocks of words and figures from one site to another. What costs money is the preparation of such blocks and their checking, amendment and subsequent duplication.

For use inside a building, or throughout a factory complex, an electronic mail system can be designed and installed with minimal regard to the outside world. But it is doubtful whether such a project would be cost effective.

A move away from an individual environment necessitates interfacing with a system which may not have been designed to your liking - in fact it almost certainly will not have been.

Most electronic communication systems use the public telephone network via a modem - and right away there are problems. Telephone networks are systems for analogue signals and human behaviour patterns, while datagrams are digital and have a totally different pattern - thus a conversion-box, a mod or an essential, and compromise solutions forced.

Unfortunately, although CCITT in Europe and EIA in the US have developed standards for digital analogue conversion, there is no single standard for a modem. The trouble comes when a cheap, low-speed modem, which is all that is needed for a teletypewriter, is expected to work on higher activity equipment.

Anyone with a lot of electronic apparatus and thus several modems (perhaps from different suppliers) discovers that the solution can be very expensive. To talk to each other they need a common language and a multiplicity of incompatible equipment makes this impossible.

What happens is that the big company that supplies the basic equipment tries to get a corner on peripherals too because small, independent manufacturers find it difficult, if not impossible, to prepare emulators quickly enough to grab a slice of the market. Customers are understandably nervous of buying probable incompatibles.

Significantly, IBM 2780 is possibly the commonest data language and is now supported by a host of peripheral electronic devices: word processors, minicomputers, intelligent copiers, etc.

One common, or standard, language would inevitably be a universal advantage in electronic communication. Companies lacking the clout to impose their own standard have to emulate a host of bigger machines at a considerable outpouring of R&D expenditure; costs which are inevitably passed on to the user.

The solution lies with the national PTTs. Unfortunately most of these are trying to cope with problems caused by using modems on a system defined for speech, not data communications. Whereas telephone line requirements for the former between, say, London and Birmingham can be estimated reasonably accurately, the same does not apply to datagrams. Users keep a data line busy for much longer and demand fluctuates, so under-capacity is difficult to forecast.

British Telecom could provide either a better telephone service or a totally separate data communications network. But in fact, it is trying to implement both solutions. The problem is that agreement on the specification of any such new system is extremely time consuming and it takes years for a solution to be defined well enough

for real work to commence.

An equally long interval follows when the value of installed equipment and capital costs of new equipment becomes a political hot potato. In the monopoly situation there is little incentive to respond to such demands at anything like the speed of development of new systems. With no common standards, the aspiring manufacturer simply has to invent his own.

Currently there are about 30 word processing systems in the UK marketplace. It cannot be in the user's interest that few of them are compatible either with each other or with standard equipment like telex.

In 1983 British Telecom has promised it will issue a standard declaring that if a supplier uses the teletext protocol BT will support it. The value of this to the business community will be enormous. Teletext outpaces telex, enables telex users to employ different characters, provide first-rate error checks and has fewer restrictions on document size.

Teletext, thus, is an excellent example of a worthwhile, cost effective advance in office technology electronics being used to overcome the disadvantages of a proven, successful communications medium. The word processor operator prepares a document in normal page format using all the available characters and it is sent without an intermediate operation - no more punching holes in his tape.

Of course this already happens on some suppliers' equipment, but how much more will the user's interest be served when no one manufactures a word processor without incorporating the teletext standard. The user can choose a machine without fear of incompatibility.

It is important, too, that an international body has defined the standard: it is vital for users that manufacturers should not impose their standard on the market.

**“If there is anything that has given office automation a bad name it is local area networks”**

If there is anything that has given office automation a bad name it is local area networks. Most of them are untried, except in limited experimental circumstances; there is no common standard; and choosing the "wrong" system prematurely may ensue the unwary. Users will find themselves locked into one supplier's net. Retreat will be impossible; expensive, and they will find themselves at the mercy of one type of "spider".

True, IEEE in the US is trying to define an open standard for local area networks, but it will take some time yet. So too will the work of the International Standards Organisation on OSI (Open Standards Interconnection) for all electronic equipment.

More office managers should spend more time defining what they really need. The current "keeping up with office automation Jones" is just as ludicrous as the '60s "keeping up with computer Jones". The buyer of equipment must always ask: "What do I want to do with this device?"

Potential users have often failed to ask themselves the basic questions and have been confused by the high technology offerings presented to them. The real area of concern should be to improve the lot of the staff, who have to do the work after all.

It is asking for trouble to buy office automation machines which will be unacceptable to tried and trusted staff. The really successful installations are those where disadvantages of existing apparatus become the starting point for the newcomer.

David Henson is a product consultant with word processor manufacturer WordPerfect.

Philip Conford hits out at the 'technological Jesuits' whose awareness programmes have overtones of propaganda

IF anyone does not yet know that 1982 is Information Technology Year, then the enormous campaign currently being mounted by the Department of Industry (DoI) must be failing. The government has appointed Kenneth Baker Minister for Information Technology, or IT (sic), and is determined to co-opt to all branches of trade and industry, to the general public, and particularly to schoolchildren, the importance of this rapidly developing aspect of the economy.

Eighty million pounds of public money has been set aside for industrial research on IT; pantechinons are touring the country with IT exhibitions; schools are being encouraged to install microcomputers; the BBC is broadcasting special programmes about computers; training courses in IT for management are being run; major conferences have been organised; the Science Museum is putting on an IT exhibition during the summer; and - perhaps the highlight of the whole extravaganza - the Post Office will be issuing two commemorative IT stamps in September.

In addition to all this, the DoI has produced various pamphlets and leaflets which aim to explain the importance of IT, and to reassure us about the impact it will have on our lives; this impact being, as one would expect, entirely beneficial.

According to the booklet Information Technology: The Age of Electronic Information, Britain is at an advantage in the field of IT because it is "a respected source of all kinds of information" (presumably an oblique reference to the integrity of the BBC), and has "a universally understood mother tongue in which to disseminate it".

A look at the use made of this mother tongue in the IT campaign literature offers an instructive example of the language of propaganda.

Of course, the concept of "propaganda" appears nowhere in the DoI's literature, even though Kenneth Baker, in an interview in the Radio Times (January 9-15, 1982) speaks of changing the attitudes of the young, who form "the most receptive audience". Like some technological Jesuit, Baker wants to reach the 19 to 29-year-olds so that they will be his for life.

Since such a process of influencing the young must not be seen as something with undesirable overtones like "propaganda", the DoI prefers the quasi-religious concept of "awareness". It is not a case of information of dubious reciprocity; instead the process is conceived of as one whereby a revealing new dimension to life.

The various elements detailed above are described as "awareness activities". Teachers must develop "software and computer awareness", since their pupils are, according to Baker, "more electronically aware" than most adults. This awareness is demonstrated by their skill at playing Space Invaders, something which Baker describes, with a certain lack of posi-

# Government is preaching Progress through Revolution



Baker aboard the MAP (Microelectronics Applications Programme) Micro Train.

tive commitment, as "not entirely bad".

He also speaks of our country's "missionary role"; but, perhaps feeling the need for an image less puritanical, switches metaphors immediately by going on to say that "We have to get Britain's act together in this field". Appropriately, The Age of Electronic Information speaks of the impact of microelectronics as "never less than dramatic".

Still the most popular image, though, for urging us into the future, is the stale, nineteenth-century idea of Progress through Revolution. Microelectronics will "revolutionise the handling, processing and storing of information", thereby becoming "the engine of economic growth".

Helping the revolution arrive as soon as possible, the government is organising "a determined and sustained push" to "make the initial breakthrough".

Unusually aware that such language is hackneyed, the booklet assures us that in this particular case it is entirely justified. The anonymous writers stress that they really mean what they say, and our scepticism is dismissed.

This picture of the world which will result from the microelectronic revolution is a fantasy, offering all the putative benefits of technology, and ignoring the real disadvantages. There will be "a profound improvement in business efficiency", and a securing of "jobs for the future".

The writers of the leaflets like the concept of security, which calms fears about the revolutionary nature of the change we will have to face. IT simultaneously offers the excitement of rapid change, and freedom from the worry that the change will have any effect on us.

The ICL Personal Computers to be introduced to the widest range of terminals, peripherals and data communication equipment.

A wide range of CP/M based software is available plus high level languages including FORTRAN, COBOL, PASCAL and PL/I.

A MP/M operating system provides multi-user multi-terminal operation.

The advantages of IT are innumerable: greater accuracy (again in banks will make robbery harder. Banks will offer customers "speedy attention, reliable advice, and secure and convenient safeguarding of their money". In shops, electronic methods will improve stock control, so that "there will be fewer delays, fewer needed items missing from the shelves...".

Magnetic cards will enable buyers to make purchases without any cash changing hands - amounts will be debited from the customer's bank account. This process will be "speedy, accurate and convenient".

Progress will march through the health service. Medical records will be electronically stored, "so improving the treatment of patients". Hospital administration will become "more effective", so that patients can have "the best service".

The DoI wants to influence the attitudes of the young and their teachers, so it is predictable that some of the greatest claims are made in the sphere of education. Unquestionably, the leaflet on The Uses of Information Technology in Schools asserts: "There is no subject that cannot be made easier by an Information Technology approach". Electronic games "can

aid comprehension"; "Computers are being used to diagnose spelling problems"; and "Slow learners now have a new teaching aid, resourceful and with infinite patience".

One leaflet speaks of the "jargon-free language" adopted in the various publications. They don't use the daunting specialist terminology of the computer expert, preferring a bluff jocularly, with liberal use of exclamation marks.

The emphasis is on familiarity. The Age of Electronic Information reconciles us to IT by ingenious sleight-of-hand: having demonstrated (without much difficulty) that IT deals with information, it proceeds to define "information" as love used to be defined - "the thing that makes the world go round". And if that is too vague, too romantic, it is more materialistically "the food of progress... the basic staple of learning, work and leisure".

So there is nothing to be frightened of. Or, more accurately, we are not told about anything of which we need to be frightened. The language of the DoI's propaganda remains jargon-free only at the price of vacuity. Since microelectronics is a specialised branch of science, any information about it must of necessity involve specialised language,

or jargon. Wanting to make the new developments comfortably acceptable, the language of the campaign material has to be diffuse, suggestive, nebulous.

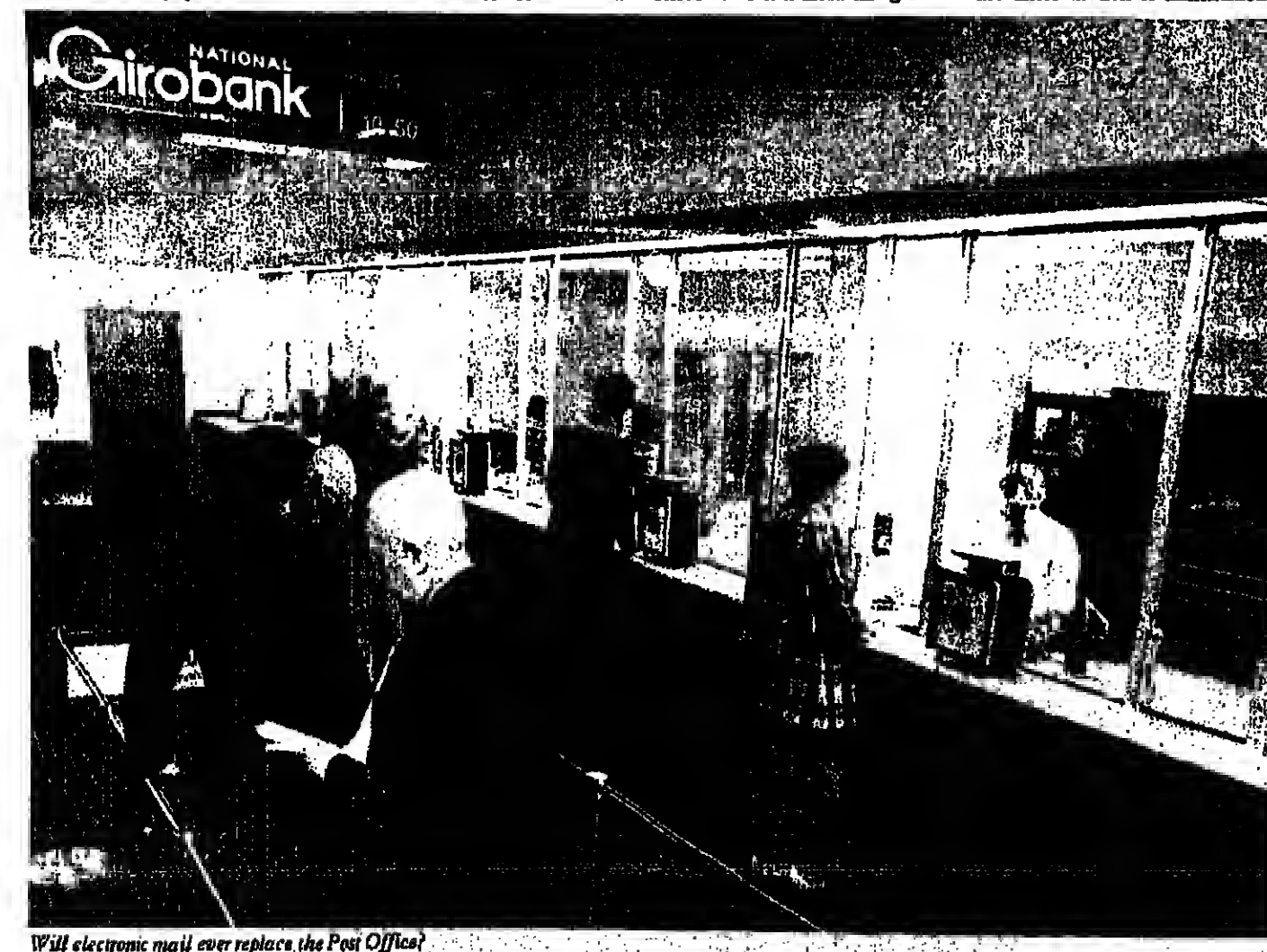
Philip Conford is a lecturer at the Chichester College of Technology.

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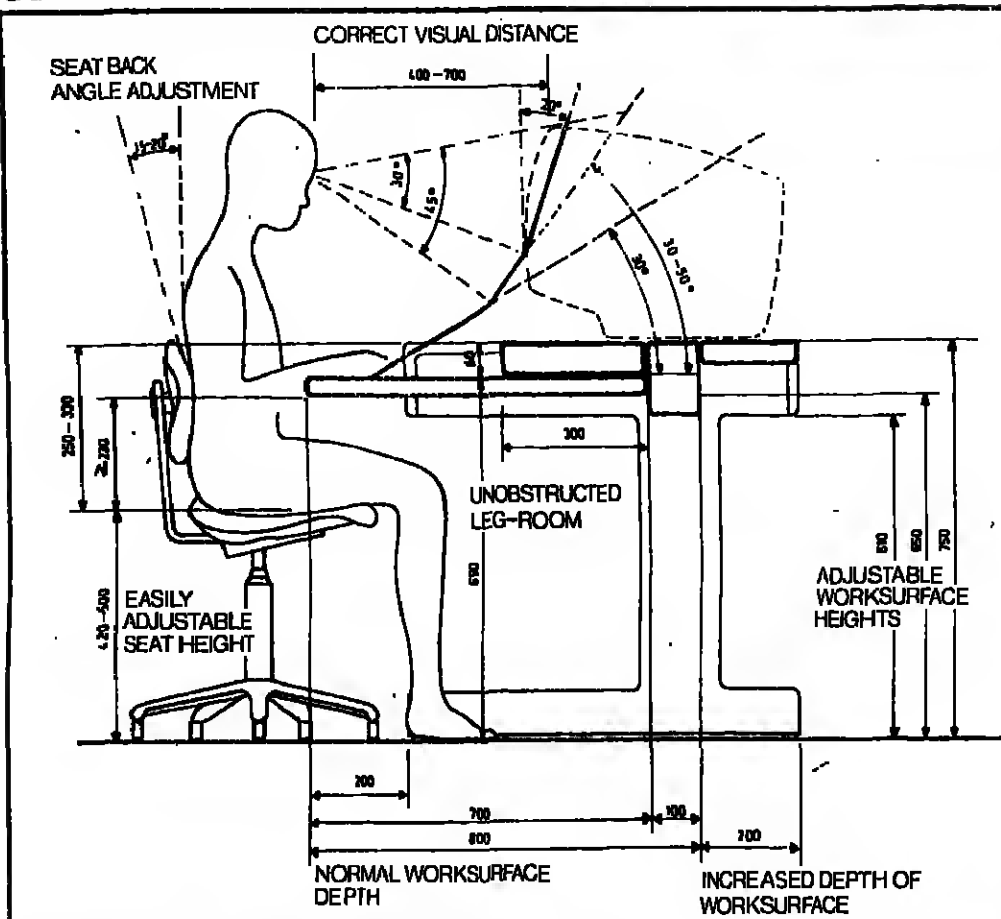
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## Fitting equipment to the worker makes economic sense

Laurie Cocking puts forward his case for ergonomic considerations when implementing office automation

OVER the last 40 years British society has made great efforts to overcome the unsatisfactory working conditions associated with many industrial processes. Standards have been produced which either eliminate totally the risk elements of performing a task, or reduce them to a more acceptable level.

The technological revolution has shifted much of the emphasis in industrial medicine to the office environment. It is estimated that whereas 60 per cent of the total British workforce in the 1950s and 1960s were employed in industrial processes, by the end of the '80s,

60 per cent of the total workforce will comprise sedentary workers. Most of us have been assailed with publicity laying claims to products which are the most ergonomic for this use or that. But precisely what "ergonomic" means when related, specifically to a product usually defies clear understanding.

Ergonomics is relatively new and by the very nature of ergonomics, explanations covering ergonomic benefits of a design are usually complex.

Ergonomics is the study of man's physical, psychological and anatomical relationship to his working environment. The study of ergonomics is reputed to have begun as part of a military project during World War II, creating seating for aircraft and tanks and for women on factory assembly lines, where sitting on uncomfortable stools was found to impair efficiency. Simply by adding backs to their seats, productivity was reported to have increased by almost a third.

Seating has probably been influenced more by ergonomic studies than any of the other areas. The logic of this is easy to understand: half the average person's waking life is spent sitting and this leads to back problems for many people. Improvements in the design of seating have progressed more quickly than those in other areas of ergonomic study because the results are more easily marketed to a painfully aware population.

However, the best results of ergonomic seating design are slow to be applied to the working environment, and many companies using the most sophisticated office automation systems are still using and buying seating of antiquated and poor design which detracts from the productivity benefits of the new technology.

The economics of using a machine which will process information four times as quickly as previous methods is easy to justify. The increase of productivity to be gained from ergonomically designed seating is less easily quantified.

Many international companies are now studying better seating which relates to the use of computer equipment. They have to. The workers are beginning to complain because the automated office requires a worker to remain in a seated position for prolonged periods of high concentration.

Many studies have indicated that the glare from fluorescent strip lighting in areas where VDU screens are in use to a large extent, is the cause of greatest worker distress, and there is considerable bibliography to support this.

Recent developments have resulted in the introduction of indirect systems known as uplighters, which replace conventional ceiling lights. The light is reflected off a pale ceiling and is glare free. Although the technique has been around for a long time, it has only recently reached a stage of development which enables it to be applied as a total replacement to conventional lighting systems in a wide variety of office environments.

During the coming years this will probably be one of the most significant developments affecting the office environment as it can be easy and economical to apply. It is energy saving and at the same time is an environmentally more satis-

factory way to light an office.

In 1977 two copy editors at the New York Times simultaneously developed cataracts after using VDUs for about a year. An investigation was made but the VDUs were cleared.

However, in the last 12 months the National Institute for Occupational Safety and Health (NIOSH) was prompted to revise its interest and make a comparison study of cataract cases in users and non-users of VDUs, after two other VDU users at the Baltimore Sun had developed the same eye problems.

There is much bibliographical evidence to show that more serious consideration should be given to the positioning of screens. An elementary consideration is that of having too small a visual distance between the screen and the user - working with a VDU is equivalent to holding your face about two feet away from your TV screen several hours each day, five days a week.

**In the final analysis, it is market demand which will exert most influence...**

It has been determined by established ergonomic study that the correct viewing distance of a screen should be between 40 and 70 centimetres, but as yet few people seem to implement the recommendations. Often this is due to other factors, such as ergonomics being fixed to the screen or seats being used which do not give back support when sitting upright.

VDU screens and keyboards should be selected for their ergonomic advantages. But the technical considerations of the equipment usually supersede the ergonomic considerations. Until equipment design achieves a considerably higher standard than at present, it is even more important that the supporting furniture is adapted to counteract what often poor overall ergonomic design in the equipment.

It would be altruistic to imagine that a single organisation could provide a totally integrated product range. The skills and the market are too widespread to ensure competitive development on all fronts, but the ergonomic requirements are very strong for manufacturers in these fields to co-operate, to design and produce new products which contribute to the future wellbeing of sedentary workers.

However, in the final analysis it is market demand which will exert most influence on the decision whether or not to consider fully the medical aspects of office furniture and equipment and manufacture accordingly.

For the most part it must be left to the individuals responsible for introducing new technology into their working environments to determine the level of ergonomic standards they can afford. But sooner or later, through the natural desire that man has to improve his living conditions, manufacturers will be forced to improve products.

Happily, the value of comfort and health is something that we are all becoming much more aware of. We are unlikely to wait for the emergence of a VDU disease before we treat ergonomics seriously.



Watching a VDU is easier when the lighting is subdued.

IT is tempting to view the electronic office as a means of throwing out filing cabinets and mail trolleys. But the emergence of office machinery from the clouds into the calm of the computer room into the environment of the general office creates its own problems which will need careful examination if this trend is not to be delayed by a popular backlash of opinion.

Clearly, there are major social questions which investment in machinery is going to pose, particularly since this investment can only be justified by savings in the wages bill. Equally, there are going to be questions asked of our buildings and builders to enable companies to absorb the new requirements of the office.

It may be that the original introduction of the computer into the office was more easily achieved because the system was surrounded by an aura of novelty, bringing prestige to the company merely by virtue of being owned by it.

The early computer installations were the cathedrals of commercial investment, and little was spared to ensure that they functioned correctly. Board directors were un-

able to accept existing extravagances contained within the budget than to accept changes or additions, however meritorious. The systems manager's demand for a raised floor in the computer room may well meet with approval, but this success will not usually stretch to influencing the design of the general office space.

In consequence, a cheaper, more popular but less effective solution to the problems of housing cabling, such as installation of floor trunking at two or even three metre centres, or floor boxes on a two metre grid, is the best that is likely to be achieved.

A popular scientific journal reported late last year that the Ministry of Information had abandoned one of its showpiece offices within its Millbank headquarters because it could not accommodate the necessary cabling. And even if it had been able to do so within the type of system just described, there would undoubtedly have been a multiplicity of trailing flexes. Safety statistics would probably show that more accidents happen in offices from tripping over trailing flexes than from any other single cause.

For this reason, many have suggested that it will be a long time before paper records are eliminated from the office. It would seem to be a defeat to admit it should be so.

There are other ways in which those who market machinery and services for the electronic office have to be careful not to foul the nest. It is no great secret to those who complain of headaches and eyestrain as a result of using VDUs, that in most cases the use of the machines is only revealing defective eyesight rather than creating it.

There is, of course, an inherent paradox in this type of workstation: watching a television screen is easier when the lighting is subdued, while reading paper needs a reasonable amount of light.

It is the responsibility of the first key to the successful marketing of the electronic office rests with the ability of the customer to house the cabling that enables it to work.

This may be a short-term problem if a national or internationally agreed standard for a network system emerges. It may be possible then to provide what in an ideal world all clients would prefer: a single circuit running round the office with as many points as they need for power or telephones, into which they could easily plug any



Cathedrals of commercial investment.

## Is your company ready for an electronic office, anyway?

Management must have specific guidelines about the cost of refurbishing an office when embarking on automation, argues Bernard Dukes

machines they want to buy, without the need for an interface. Until that happens, it may be wise for equipment manufacturers and the end user to undertake a full appreciation of the existing and potential cabling problems inherent in every installation, before the moment of sale, otherwise the speed at which the electronic office is going to be accepted will be

affected by the less than desirable results of cable mismanagement. Clearly, too, management is going to have to make decisions about standby power and duplicate machines. In a predominantly manual system, the worst effects of power failure can be overcome by wearing an overcoat and lighting a candle. This is not an option for the operator of an electronic office, where power in general, or the central processor in particular, fails.

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It is the responsibility of the manufacturer to ensure that the reflectivity of the keyboard and the screen, and the stability and format of the display bear critical examination. If this is achieved, then many of the problems facing the lighting designer are removed. But he still needs to ensure that machines are positioned carefully to avoid window reflections, one of the more commonly occurring

of the need for large central head-quarters offices.

The trade unions are already trying to ensure that ergonomic standards are introduced which minimise the amount of unemployment created. These are questions beyond the scope of this article.

We cannot, however, sell our product and services in a vacuum. Only by appreciating the problems can we hope to avoid prejudicing the development of our market.

The author is managing director of Dukes Electrical, a contractor specialising in the installation of electronic systems.

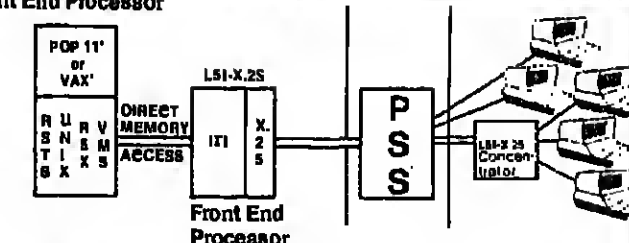


More accidents through trailing flexes than from any other cause.

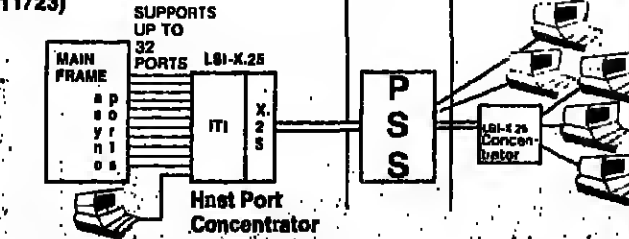
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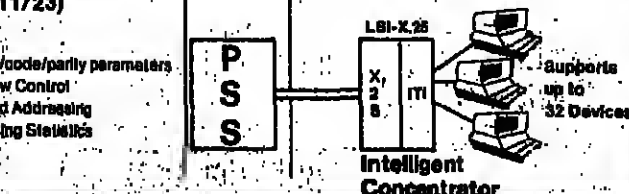
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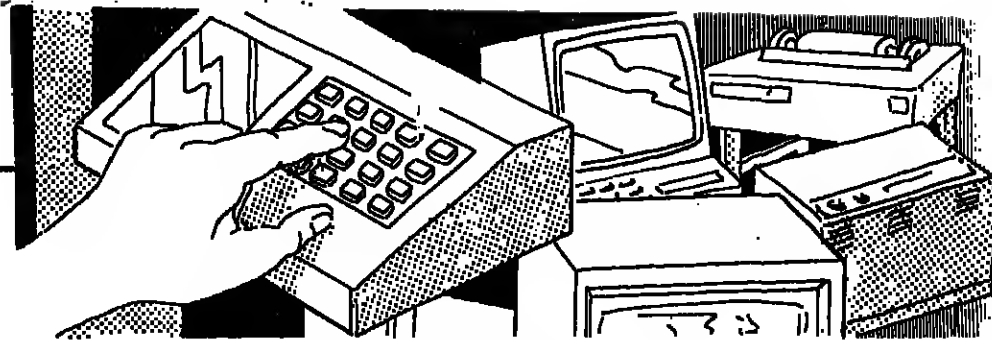
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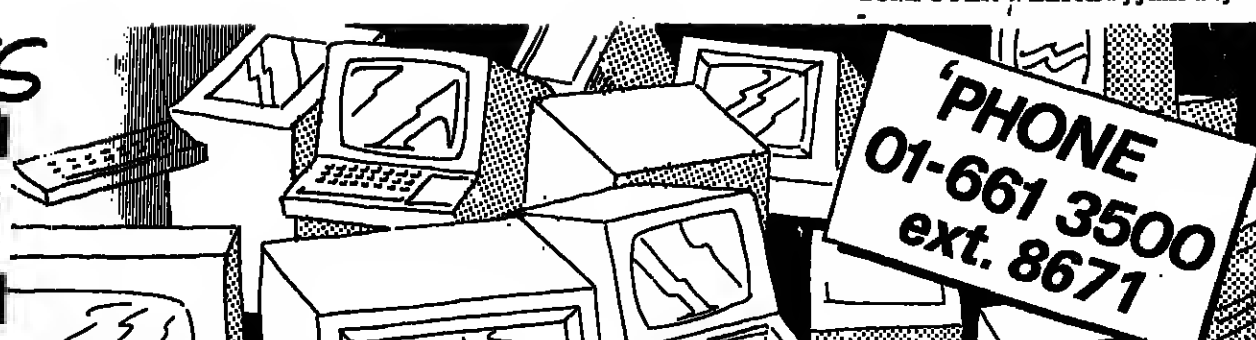
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### PROGRAMMER HONEYWELL 16

£8,000

A prestigious installation is currently seeking to recruit programmers with a minimum of 18 months' programming experience to further enhance its D.P. department. Candidates should be of a high educational standard and should possess a thorough knowledge of TPS SCREENWRITE together with its facilities. A commercial applications background is desirable but not essential. Career progression within this successful company is assured as they are continually updating and enhancing their systems capability.

### ANALYST/PROGRAMMER HP COBOL

£9,000

Manufacturing company based in N. London with a small and friendly D.P. department seeks an Analyst/Programmer with approx. 3 years' experience. The company is currently expanding their systems department around a Hewlett-Packard 3000. Any knowledge of HP Systems and software would be useful but not essential. This is a good opportunity for the successful candidate to move quickly into a senior position.

### PROGRAMMER RPGII

£9,000 + Mortgage

Bank based in C. London need a competent RPGII programmer, preferably with a degree, to join their small but expanding department. Applicants should be good communicators since they will have to educate the department in RPGII (currently using Basic). There is a limited amount of worldwide travel and standard Banking benefits to include a subsidised mortgage.

### JUNIOR PROGRAMMER BASIC

£7,000

A software/systems house who are also OEM for Data General require a programmer who has a minimum of 6 months' experience in a commercial environment to supplement their team. The ideal applicant will be in their early 20's.

### SENIOR PROGRAMMER COBOL

£10,000

Specialist software house based West of London requires a Senior Programmer to complement their existing team. Applicants should have 2-3 years' COBOL experience preferably gained on Burroughs small systems using Database and On-line techniques. As well as an excellent starting salary and pleasant working environment there is the possibility of a company car.

### SENIOR PROGRAMMER ICL COBOL

£9,000

East London based site seeks a Senior Programmer with around 3 years' COBOL experience gained in an ICL environment. The company is shortly changing from an ICL 2904 to an ME29 and the successful candidate will be heavily involved in the conversion and subsequent development of the system.

### PROGRAMMERS HP COBOL

£8,000

International financial concern requires programmers with approximately 18 months' COBOL gained in a commercial environment on any hardware. Applicants with a good academic background or a financial background are preferred and in return will be given training on Hewlett-Packard systems and software. For the successful candidates there will be quick progression to Senior Programmer levels. Perks include annual bonus, subsidised mortgage and some overseas travel.

### PROGRAMMER BASIC/RTSC

£8,000

A systems house specialising in DEC systems has a requirement for 2 BASIC + programmer. Applicants should have around 18 months' BASIC + experience gained in a commercial environment. This is an ideal opportunity for programmers to move on to VAX systems since the client is installing several VAX based systems.

This is just a small selection of current requirements: for details of these and others not advertised call us now.

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0047

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recherche pour sa Division  
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d'organiser et de diriger l'exécution des travaux sur les équipements centraux et auxiliaires; d'assurer le lien avec les fournisseurs; de contrôler le rendement et tenir les statistiques des travaux effectués; de contrôler le temps d'utilisation des machines; de gérer le bibliothèque des bandes et d'effectuer les travaux connexes.  
L'équipement actuel se compose d'un ordinateur IBM 4341 avec DASD et TOTAL, d'un système IBM 234 et autres équipements auxiliaires.  
Seules les candidatures de personnes ayant au moins deux ans d'expérience dans les opérations d'ordinateur seront retenues. Connaissance ou préférence de la programmation en COBOL, du fonctionnement des réseaux de télécommunications, de gestion des bases de données particulièrement souhaitées.  
Diplôme universitaire, ou formation équivalente exigée.  
Très bonne connaissance de langues française et anglaise exigée.  
Les candidats doivent être représentatifs d'un pays membre de l'OTAN.  
Le formulaire de candidature peut être obtenu en remplissant le formulaire AO-4762 à l'adresse suivante:  
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Date limite pour la réception des candidatures:  
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(05050)

### Systems Sales: To £17,000 + Car

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Berkshire-based company require one salesperson to sell Systems in London and Northern Home Counties. Also a peripheral salesperson for London and South East.

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Hertfordshire Systems company require person with at least three years' hardware selling experience, to sell hardware, software and turnkey packages.

### Software Engineers: £15,000+

Middlesex/London-based company requires degree level person to work in development applications and support. Good micro-software, small systems design and high-level language experience necessary.

### Software Sales: Eng. + Com. + Car

Middlesex software house requires sales people up to 30 years, with at least two years' experience, and a good knowledge of scientific technology.

### In House/Site Engineer: £13K + Car

Middlesex software house requires DEC engineers, 30 years with at least three years' DEC exp. Micro exp. also very useful as is communications/process control. Applicants must have Assembler and one high level skill, such as RTL II Pascal or COBOL.

Work is centred around the engineering, defence and network field.

### Field Engineers: £7.5k + Choice of Car

Bucks.-based systems co require engineers with at least two years' experience on Minis/Micros to work on floppy, hard and fixed discs machines and all relevant peripherals.  
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**NETWORK**  
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LONDON W1

(0046)

# myriad

## A Challenging and Interesting Programmer/Analyst Role

Wembley Neg.c.£8,500

We are seeking an experienced Programmer who has had some exposure also in the Programmer/Analyst role. He/she should have sound commercial applications experience, with some knowledge of Sales Order Processing or Stock Control systems. On-line programming experience, using COBOL, is necessary. The client expects the person appointed to be capable of working with users, and making relevant technical decisions.

Our client, a world leader in the supply of scientific equipment which exports some 50% of its turnover, is developing its existing ICL-based Sales Order Processing, Stock Control and Sales Ledger systems. Additionally — and with exciting experience for the right person — our client is introducing hardware and software, including TOTAL database, from a major US manufacturer, as part of a major programme of rationalising, expanding and enhancing systems.

The person appointed will play a leading role in the enhancement of the existing systems and will take this experience across to the development of new systems. Relevant technical training will be provided as required. Contact our London office quoting reference E1/2406 and learn more of this exciting opportunity.

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31 Fleet Street, London EC4A 3AA Telephone: 01-358 0981 24 hours  
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# myriad

## Analysts and Programmers

Near Waterloo

£8,000-£12,000

Our client, a major UK organisation, is seeking career-minded and experienced systems and programming personnel to enhance their project teams currently engaged on an extensive systems development programme.

Applications are invited from professionals with at least three years' data processing experience gained in the development of commercial systems preferably working on IBM or ICL equipment.

This is an excellent opportunity to work on major development of on-line/real-time and database systems. A competitive starting salary is offered, together with generous other benefits. There is full scope for career advancement and further training is positively encouraged.

Ref: SE2406

## Programmers to Project Leaders

Essex

£7,000-£11,000

Our client has outstanding openings for D.P. professionals who wish to further their career on an interesting variety of applications.

Vacancies range from PROGRAMMERS to SENIOR ANALYST/PROGRAMMERS and PROJECT LEADERS. Successful candidates will work within a stimulating and professional environment using advanced techniques on a range of projects.

PROGRAMMERS should have a minimum of eighteen months' COBOL programming. ANALYST/PROGRAMMERS should have a minimum of two years' experience. These positions will appeal to Senior Programmers seeking a move to systems analysis.

PROJECT LEADERS should be capable of designing and controlling projects from feasibility to implementation.

The company has an excellent record of growth and, in addition to excellent conditions of employment, offers a secure and progressive future.

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## Programmers and Programmer/Analysts

Central London

£8,500-£11,500

Our client is seeking to recruit young, enthusiastic and well-motivated Programmers and Programmer/Analysts, wishing to advance their careers in a technically stimulating and challenging environment.

These positions offer the opportunities to:

- ★ Develop new systems, including 'THE OFFICE OF THE FUTURE'
- ★ Work on IBM 4300 and a mini network
- ★ Progress rapidly to analysis and project responsibilities

Ideally, applicants will have at least two years' COBOL experience preferably gained within an IBM/ICL environment. The company offers excellent starting salaries and a range of substantial fringe benefits.

Ref: C2406

## Systems Analyst seeking project responsibility?

W. London/Middx.

Move to five figures

A Systems Analyst, seeking project responsibility on a major business system, is now required to augment our clients new project development.

In order to integrate new design concepts with existing on-line applications, the successful applicant will need to possess a strong business awareness and the ability to relate confidently to user personnel. Offering the opportunity to establish your career, this position requires initiative, good liaison qualities and the experience of previous project success.

Joining a professional business environment, where a powerful IBM mainframe is utilised, a full range of company benefits including pension scheme and life assurance accompany this opportunity.

Ref: WJ2406

01-358 0981



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Our client is one of the world's largest companies operating in every continent. Their corporate review and operational audit teams carry out a wide range of investigations and management audits within the manufacturing, marketing, distribution, administration and accounting functions.

This position calls for an EDP specialist who will enjoy a high degree of travel whilst performing EDP test and interrogation audits, training junior auditors and liaising with management on EDP problems. An excellent salary and benefits package is available including full living expenses.

Candidates aged 24-27 should have good EDP exposure preferable gained within a large company environment.

Interested applicants should contact Robin McWilliams on 01-242-0965 or write to him at 31, Southampton Row, London WC1B 5HY.



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Recruitment Consultants  
London Birmingham Manchester

## Consultants

To £15,000 p.a. + Car + Relocation  
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Hampshire

Our client, a company specialising in systems products and services for the manufacturing and distribution sector, both in the U.K. and Europe, is seeking to recruit a number of additional Consultants. Sustained growth has generated these vacancies in the product development, training, installation and customer service groups.

You will be a mature systems professional able to demonstrate a successful track record in manufacturing and distribution and seeking a challenge where success is recognised and appropriately rewarded. The ability to fully protect the company's commercial interests whilst ensuring effective problem solutions for clients is essential. You will be between 28 and 40, a graduate or equivalent and will have obtained your experience with a systems house, a computer manufacturer or the management services division of a large computer user.

Salaries and benefits are highly competitive and geared to the attraction and retention of top quality staff.

Our client is enjoying significant growth and career prospects are excellent.

To apply please contact Brian Postles.

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### SOFTWARE and HARDWARE AUTHORS

with experience in one or more of the following areas:

- small business system applications
- telecommunications
- digital electronics
- Z80 based micros under CP/M with BASIC and/or PASCAL
- Computer Aided Instruction / Learning
- 'electronic offices'

These positions would suit analysts and programmers or engineers with a flair for writing good documentation.

Take this opportunity to discuss these and other requirements by phoning Mark Clifford or Edith Watson on (0462) 57141 or write to: Marketing and Recruitment Department, Industrial Artists Limited, 21 Bancroft, Hitchin, Hertfordshire. SG5 1JP

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10011

## Computer Service Engineers

### minicomputer systems

Our client is a significant American manufacturer of minicomputers which incorporate a sophisticated technology which is the envy of the industry. Very rapid expansion of this service orientated company has created an opportunity for experienced customer service engineers to join a highly talented team which provides hardware field service throughout Great Britain.

The requirement is for self-starters with a minimum of two years' experience in providing technical field service to minicomputer installations which include printer and disk devices. The ability to absorb training and the ambition to make a long-term successful career is vital.

Terms include a competitive salary, company car and those benefits associated with a highly successful, forward-looking international organisation. Locations: London and South of England areas.

Applicants should write in complete confidence to: W. H. Pierce, Director, Peterson Davidson Limited, Elliott House, 28A Devonshire Street, London W1M 1RF.

**PDL** MANAGEMENT & EXECUTIVE SELECTION  
FOR HIGH TECHNOLOGY BUSINESS

### Senior Analyst/Programmers Real-Time Systems (Bracknell, Berkshire)

#### The Person

You should have a good degree in Computer Sciences and a minimum of two years' experience of real-time systems on minicomputers PASCAL, COBOL, ALGOL or ASSEMBLER. Experience in database and experience of program specification, design and systems analysis would be a definite advantage.

#### The Job

You will design, implement and document real-time software to run on microprocessor based autonomous and networked computer systems. The processor is the Motorola 68000 device and development work will be on a PDP11/44 and the Motorola development system. The systems will perform machine control and test and data handling operations on a scale normally associated with large multiple mini-computer installations. Systems will communicate via high speed local area network.

#### The Company

Protech has been established to exploit the field of computer technology primarily in support of the TV broadcast industry. The company can be expected to expand rapidly offering a real challenge and excellent career opportunities for those there at the start.

#### The Rewards

A competitive salary commensurate with experience is offered coupled to regular reviews. The company offers all the usual benefits including profit share, private medical insurance, pension and flexible working hours. Coupled to this is the attraction of working in a small company environment and the interest which stems from continually expanding horizons.

Please apply to Mr J. W. Anderson  
Protech Computer Systems Limited  
Alpha House, Tenetwood South,  
Bracknell, BRAC 1NN, Berkshire RG12 5DN

## Computer staff at the British Library

The British Library's London-based Computing and Telecommunications Branch supports a wide range of computing activities together with the BLAISE online information retrieval and cataloguing services for external users.

Current systems are based on IBM 370 (PL1 and Assembler), ICL 2904, local minicomputers and microcomputer intelligent terminals.

### SENIOR SYSTEMS ANALYSTS (Ref 26/724)

We require two experienced systems analysts to work on the investigation and design of current and future systems, and to oversee systems testing and implementation.

Applicants should preferably have a good knowledge of library and information science work. Familiarity with library automation or information retrieval systems, together with a detailed knowledge of computing in an online environment, would be advantageous.

### ANALYST PROGRAMMERS (Ref 26/725)

We also have vacancies for two experienced analyst programmers who should have a sound knowledge of computing, and programming experience in one or more appropriate languages on the above (or similar) hardware. Experience with information retrieval techniques, library automation, communication software, would be advantageous.

Salaries for all four posts are from £8,909 to £10,845, inclusive of London Weighting allowance.



For an application form please contact Marie Loftus, The British Library (Personnel), 2 Sheraton Street, London W1V 4BH; telephone 01-636 1544 ext 514. Please quote ref number. Forms must be returned by 7 July.

## NEW ZEALANDERS

Wilson-White Associates is one of New Zealand's leading EDP personnel consultancies.

New Zealanders intending returning home are invited to talk to Hector Guthrie, one of our consultants, to discuss probable openings, current salary structures and the New Zealand computing scene in general.

For further information phone 01-748 9034 or write to 55 Lonsdale Road, Barnes, London, SW13.

## ADVANCED DATA COMMUNICATIONS SOFTWARE DESIGN ENGINEERS AND PROGRAMMERS

Our client, having achieved considerable success in the field of high technology applied to the design and development of high speed data communications equipment, including TELETYPE and PACKET SWITCHING equipment, is now looking for experienced software designers and programmers. Candidates wishing to meet a new challenge in high technology should have a Real-time software background and experience in one or more of the following:

- \* X25 Communications
- \* High level languages
- \* Local area networks
- \* Assembler programming

Salaries: Software designers with a min. 3 yrs exp. £11,000 p.a. Programmers with 2yrs-4yrs exp. £7,250-£9,700 p.a.

A superb relocation package is available to the South Coast. This is an excellent opportunity to work on the new phase of new equipments shortly to be launched on world markets.

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## U&A

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### TI PEOPLE

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If you have a minimum of one years experience on TI990 then this licence organisation could be very interested in you. This firm also has an extensive IBM installation and could train people on this side of their business. Very good mortgage assistance and free BUPA are just some of the perks. CW 25/1

### RPG PEOPLE

**HOME COUNTIES** to £10,000  
We are looking for experienced RPG Systems 34/38 Programmers and Analysts Programmers for multi various vacancies in C. London, Enfield, Bromley, Harlow and South West Middlesex plus other locations. All these companies offer super opportunities for career progression plus relocation expenses and one offers banking perks. Please ring now. CW 25/2

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**KENT** to £10,000  
How is this for an opportunity? A major commercial organisation can offer not only reduced fares but also assistance with moving and expenses. You have to provide an ICL COBOL background or TOTAL experience plus the ability to supervise a small team of programmers. CW 25/3

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**LONDON/SOUTHERN HOME COUNTIES** £9,000 to £15,000  
Presumably you do exist?  
If you have any in-depth experience of one of the following, we have a number of well-heeled clients eager to pass a very good salary into your hands: DOS/VSE, OS, VS, VM, MVS, IMS, CICS, BTAM or VTAM. Trainee Systems Programmers with an application programming background would also be very welcome. CW 25/4

### BANKING SYSTEMS ANALYST

**CITY** to £13,000 + perks  
A small bank based in the City with a SYSTEM 38 now requires someone with banking or similar background who would like to work in a small friendly team. RPG III is not essential but would be useful as there is also an Analyst/Programmer vacancy. CW 25/5

### SALES - SUPPORT OPPORTUNITIES

**C. LONDON & HOME COUNTIES** £ Neg + Car  
A very famous computer manufacturer is eager to engage sales support staff who have experience as programmers or analyst/programmers with a retailing application background preferred. Your previous computer experience is unimportant but most essential is the ability to get on with people and be presentable. CW 25/6

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Please send me further information and an application form for Analyst Programmer ref: PS/601501/705/CV.

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Minimum 5 year experience in E.R.D. Project leadership and system design would be an asset. Good Cobol language essential and experience on NCR 5270/5305 V operating system. Client currently converting from Batch IBM to on line NCR. Salary negotiable in accordance with experience. Accommodation provided and shared transport. Working cycle 8 x 8 hours. Leave cycle 4 weeks followed by 2 weeks UK leave.  
Write in first instance giving details of qualifications and experience to: Macconex Limited, 51 Fox Lane, Wandsworth SW20 0AH

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If you want to know what vacancies are currently available in all Southern Counties ring

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c. £10,500

Manchester

The Software Products Scheme provides grants to computer service companies for the development and marketing of software packages. NCC administers the Scheme on behalf of the Department of Industry. Because of a significant expansion of the Scheme the Centre now requires additional staff.

The work includes the technical and commercial assessment of proposals and the monitoring of grant-aided projects. Applicants should have a broad knowledge of computer hardware and software. Experience of managing software development projects or of marketing software products will be a particular advantage.

These now posts are based in Manchester but a willingness to travel throughout the UK is essential.

Starting salary: About £10,500 in a range rising to £14,260.

Conditions of service are excellent and include 25 days annual holidays plus 10 statutory days. Contributory Pension and life assurance schemes. Help with relocation expenses.

Please write with career details or write/telephone for an application form to:

The Personnel Manager, The National Computing Centre Ltd., Oxford Road, Manchester M1 7ED or telephone 061 228 6333.

**NCC**  
The National Computing Centre

## Operations Support Specialist

Up to £8,000 Halifax (West Yorkshire)

We are Samuel Webster & Sons Limited — a long established brewery, situated in a pleasant rural area on the outskirts of Halifax. Part of a major group — we are committed to the implementation of new technology in all facets of the business.

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Initially, this involves setting-up and being responsible for, the technical operating standards within the department. Later, the job will involve some programming expertise for which training will be given.

The person appointed will be a key member of a highly professional team, who act as an internal management consultancy for the brewery. The department is involved in every aspect of brewery management and is responsible, not only for computing, but also telecommunications, work study, organisation and methods and office administration. The D.P. section runs one Data General C350 Eclipse, an MDS 2400 and an MDS21/50, with additional Data General equipment on order.

This is an ideal opportunity for a man/woman with at least 4 years experience in computer operations, who is currently working in a support role or as Chief Operator or Shift Leader — and who now wishes to progress to a more challenging, rewarding job.

We offer an excellent benefits package, which includes where necessary re-location assistance. This plus the opportunity to progress within a forward thinking organisation must make this one of the most exciting opportunities currently on the market.

To apply — please write with full curriculum vitae to:



John Mahon,  
Manpower Resources Manager,  
Samuel Webster & Sons Limited,  
Fountain Head Brewery,  
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Tel: 0422 83481.

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required for September 1st to teach Programming and Computer Application on Business and Management Studies Courses. Applicants should have a knowledge of BASIC and preferably COBOL together with experience in business data processing. Salary: £6,355-£9,267 (Burnham Technical Scale) commencing salary will be determined by experience and qualifications. Application forms and further details may be obtained from the Principal, Peterborough Technical College, Park Crescent, Peterborough PE1 4DZ. Application forms should be returned as soon as possible.

### DATA SCIENCES INTERNATIONAL LTD BUSINESS SYSTEMS SALES c. £20,000

Our London (Ilford) Office requires an experienced salesman to pioneer sales of our on-line systems, in the South.

You should have a sound business systems knowledge and ideally a background in interactive systems sales.

If you have these qualities together with a successful sales track record contact:

Ken Fitzgerald, Sales Manager  
D.S.I. Ltd  
325 Ilford High Road, Ilford, Essex  
Tel: 01-553 1421

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## Senior Software Development Engineers

Appointments are to be made in the Instrumentation and Training Division of Marconi Radar, to work on high technology products for the computer generation of imagery.

Applicants (male or female) should be experienced software designers with good qualifications and knowledge of the constraints of real time process control. Familiarity with PDP 11, VAX 11, their operating systems and Macro 11 and Pascal languages would be desirable.

Write or phone Ronald Harris, Marconi Radar Systems Ltd., New Perks, Leicester LE3 1UF. Telephone 0533 871481.

**Marconi**  
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OPPORTUNITIES  
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You will probably be in your early twenties and providing TECHNICAL SUPPORT in a TIMESHARING or similar environment.

Your ambition will now be to join a Sales Team where your drive and Technical ability will give you the opportunity of high earnings.

Although you may not have had any experience in selling, you will have already gained a conceptual knowledge of its procedures and have a mind capable of innovative thought.

Based Central London, the position would commence in a Support role, moving directly into sales after a short period.

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Further information will be gained by contacting;  
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## OUTSTANDING OPPORTUNITIES

Due to continued success in their specialist field this dynamic young organisation is expanding and seek a further two individuals with the right qualities to contribute to their future plans.

### ANALYST PROGRAMMER (CONSULTANT)

£11,000 + Car + Bonus

The successful candidate should currently be either an Analyst or Analyst Programmer, with experience gained on the IBM GSD Hardware. A graduate with background in Financial Applications and some experience of Programming in RPG II would be ideal.

### RPG II PROGRAMMER

£9,000 + Car + Bonus

For this position you will need around two years' experience of Programming in RPG II and a desire to be involved in both analysis and Systems 38, sooner rather than later.

The company sees these positions as providing unlimited potential through a wide variety of projects.

Intensive training will be given where necessary. Length of experience, whilst not disregarded, is not as vital as the ability to accept and thrive on the high degree of responsibility offered.

For further details please call:

JEFF RUBBERT  
Quoting Ref. A/7149

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## Software Trainers

Central London: Salaries to £10k

The Training Division of a leading, London-based Systems and Software House has a number of vacancies for either experienced Trainers or software specialists wishing to adopt a new and challenging role. Candidates should be graduates, not necessarily in a scientific discipline, and be able to communicate effectively both orally and in writing. Previous experience in a teaching or training role is preferable but by no means essential.

## Real-Time Programmers

Hants/Surrey: Salaries to £11k

Real-Time Programmers are urgently required by the design and development division of a renowned Systems and Software Supplier based on the Hants/Surrey border. Suitable applicants should offer a minimum of 12 months' programming experience in a real-time mini- or microcomputer environment. Particular hardware skills are not important but a salary premium will be paid to applicants who have had some exposure to UNIX-based systems. It is essential, for all positions, that you offer fluency in at least one of Pascal, Fortran, C or Assembler. Working as a member of a small team, you will be involved in projects which include data communications, process control, simulation and networking.

## Real-Time Systems

Netherlands: Salaries to £16k

A successful European supplier of Total Systems and Software Products has a number of vacancies for Systems Engineers and Software Programmers for permanent career positions in the Netherlands. Candidates should hold at least one numerate degree and have one year's post-graduate work experience. Systems software programming expertise must include fluency in a high-level language such as Pascal or RPL-2 with preferably a reasonable command of Assembler as a secondary skill. Applications experience should have been within one or more of process control, industrial automation, C systems or retail banking (i.e. automated tellers). Full relocation expenses will be met and whilst some knowledge of either Dutch or French would be appreciated, the Company will provide language courses. Preliminary interviews will be held in our offices in mid-July.

## Senior Software Designers

Thames Valley: Salaries to £16k

The Research and Development unit of a major supplier of office automation and networking products is currently seeking Senior Software Designers. Candidates, aged 27-35 years, should have a minimum of five years' design experience in a distributed processing environment and be fully conversant with communications protocols, layer architecture, voice communications, terminal protocol and, in general, local and wide area networks. For the more senior positions, you should have man-management and project control experience and in particular be able to work to tight production and delivery schedules. Relocation expenses will be considered where appropriate.

## Micro Software Development

Cambridge: Salaries to £12k

Programmers and Software Team Leaders are urgently required to assist in the development of applications and systems software for a new generation of micro-computers. Successful candidates for the positions of Team Leader will be fluent in a high-level block structured language and have specified and implemented at least one compiler. Working in-house, their responsibilities will include the design, development and commissioning of systems software and the evaluation of commercial packages submitted by sub-contractors. Programmers will also be expected to offer fluency in a block-structured language and, preferably, have gained the majority of their post-graduate experience in micro-based systems. High standard of documentation and the ability to conform to tight deadlines are required of all respondents who, in return, will be rewarded by highly competitive salaries and a dynamic working environment.

## Comms. Software Designers

South Wales: Salaries to £11k

A world-leading supplier of telecommunications equipment has a number of requirements for Communication Software Designers to join its Research and Development facility. All candidates must possess at least one degree in Computing Science or Electrical/Electronic Engineering and have had two years, or more, in an industrial environment. Past responsibility for hardware implementation, as well as software design of low level protocols up to, and including, Transport Layer Service will be favoured. Applicants should, preferably, have hands-on experience with a leading MDS and be fluent in an Assembler and one or more high-level block-structured languages.

## Fortran Programmers

Hertfordshire: Salaries to £11k

An established supplier of Computer Aided Engineering Turnkey Systems is seeking to expand its software development department by the recruitment of additional Fortran Programmers. You should hold at least one degree in a numerate subject and have a minimum of 12 months' subsequent Fortran programming experience. Working as a member of a small project team, you will be assigned to a development project within one of the following areas: namely Production Control, Micro-Electronics (Integrated circuit design), or Oil/Gas Exploration. Our clients' software products are portable but those candidates who have current programming experience on PDP-11/VAX or Prime-based hardware will attract a salary premium.

## Technical Authors

Cambridgeshire/EEC: Salaries to £10k

We have recently been contacted by several companies seeking Technical Authors for Cambridgeshire and overseas locations. Applicants for all positions should have a designed and written User documentation advantage since the client anticipates you for at least one hardware or software product. A good command of the English language is essential as is the ability to communicate with both technical and non-technical personnel. For overseas positions, some programming experience would be a distinct advantage since the client anticipates you will eventually progress into a software development role.

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These overseas appointments offer the individual significant career development potential, and applicants are requested to contact Rex Ashcroft on 01-935 0671 during working hours, or Harlow (0279) 416529 evenings and weekends. In order to arrange a preliminary interview.

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For further information telephone 01-493 2847 daytime, for UK positions ask for Jenny or Ian, for Overseas positions Jenny or Roger, evenings 8-9 p.m. or weekends Jenny Dalrymple-Hay on Beaconsfield (04946) 4575, Ian Murray West on Milton Keynes (0908) 563415, Roger Allington on Little Gaddesden (044284 3636), or write quoting Ref. 9914.

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**IBM 30XX MVS/JES 2**

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Minimum 4 years' and 2 years' experience respectively plus exposure to JCL, FDR and TMS.

**ANALYST/PROGRAMMERS**

MUST have COBOL or NATURAL, ideally with experience on some of the following MSA products - PANVALET, SYNC SORT, FD, TMS, ADABAS, etc.

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# Analysts Programmers

- **SOUTH COAST**
- **SALARIES TO £12,000 PLUS**
- **SUBSTANTIAL BENEFITS PACKAGE**  
(Including Relocation Assistance)
- **EXPANDING FINANCIAL GROUP**
- **EXCELLENT CAREER PROSPECTS**

**The Company**

Schroder Assurance and Investment Holdings Limited is an expanding group in the life assurance, pensions, unit trust and financial planning fields both in the UK and overseas. The Company is a subsidiary of Schroders Public Limited Company, an international organisation with interests in a wide range of banking and financial services in some 18 different countries.

The Group head office is ideally situated in modern offices in historic Portsmouth, with good road and rail communications throughout Hampshire, Surrey and West Sussex and a frequent rail service to London. Portsmouth is favourably placed to take advantage of the numerous leisure pursuits available on the South Coast, the Solent, South Downs and New Forest.

The Management Services Division is responsible for developing and running the group's advanced on-line computer systems which are a cornerstone of the Company's growth plans. The Division now requires additional staff to help meet its ambitious development targets.

Computers installed include DEC PDP 11/70 and VAX 11/780; an IBM Bureau (4341 VM/DOS & CMS) is also used. Database, data communications and office automation techniques are central to the data processing strategy.

**The Requirements**

**BUSINESS ANALYST:**

a minimum of 3 years experience in business systems analysis and project management ideally within the life assurance industry

**SYSTEM DESIGNER/PROJECT LEADER:**

analyst/programmer with experience in VAX on-line commercial systems/database/data communications/life assurance systems and ability to lead a multi-discipline project team

**ANALYST/PROGRAMMERS:**

at least 2 years experience in commercial applications programming using high level languages to high professional standards

**IBM ASSEMBLER PROGRAMMER/ANALYST:**

1-2 years experience in IBM Assembler programming plus ability to move into systems analysis/design role

**TECHNICAL SUPPORT PROGRAMMER:**

at least 2 years experience in technical support or software programming on DEC PDP 11 (RSTS or RSX) or VAX (VMS) equipment

**DATABASE DESIGNER/DATA ANALYST:**

experience in design of commercial database system, or in a data analysis/data management function

**O & M ANALYST**

experience of office automation projects working in multi-discipline teams associated with the design and implementation of computer-based solutions in an office environment

**The Benefits**

Mortgage Subsidy Luncheon Vouchers  
Non-Contributory Pension Scheme Full Relocation Assistance  
Flexible Working Hours

For further details and/or an application form, write or telephone now to Mike Keeley at



**Schroders**

**SCHRODER ASSURANCE AND INVESTMENT HOLDINGS LIMITED**  
Enterprise House, Isambard Brunel Road, Portsmouth PO1 2AW  
Tel: Portsmouth (0705) 827733 Ext. 265 (office hours)  
or evenings/weekends (0428) 3310



# TRIDENT CONTRACTS

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### FREELANCE OPPORTUNITIES

#### SOUTHERN 0276 64252

BURROUGHS 66/6800 DMS 11 COBOL.  
Long-term assignments. Start A.S.A.P.  
Any COBOL with Michael Jackson  
structured techniques

Analysts with Life Assurance or Financial  
background.

Analysts various Systems  
UNIVAC 1100 COBOL some with DMS  
UNIVAC 1100 Fortran  
UNIVAC 90/30 OS RPG 11  
UNIVAC 90 IMS COBOL  
IBM Adabas Analysts/Programmers  
IBM, OS COBOL  
IBM, COBOL, CICS & DL1  
IBM PL1 Various requirements  
IBM B100, DPPX, DPX, COBOL  
IBM SYSTEM 34, RPG 11 & DMS or  
MAAPICS

IBM COBOL, CICS & QPAC  
IBM CICS (DMS)  
IBM IMS DB/DC PROGRAMMER  
SYSTEMS DESIGNERS  
IBM CMS COBOL

IBM CICS, VTAM, COBOL/ASSEMBLER  
IBM MARK IV  
IBM UFO Expertise

IBM PL1, SHADOW  
IBM System Programmers  
IBM MVS COBOL SHADOW IDMS

IBM Assembler on-line DATABASE &  
TASK MASTER  
IBM SYSTEM 38 RPG 111

IBM PL1 to COBOL CONVERSION expertise  
HONEYWELL Level 6 COBOL SCREEN WRITE  
HONEYWELL DPS4, IPS, COBOL  
HONEYWELL DPSB COBOL  
PROGRAMMERS

ICL Applications Manager  
ICL ME29 COBOL

ICL Range COBOL  
ICL SYSTEM 10 ASSEMBLER

ICL SYSTEM 25 ASSEMBLER  
PDP RSTS/E BASIC + or BASIC + 2 (some  
with DATABOSS)

PDP RSX11M BASIC + 2

VAX SYSTEL  
VAX COBOL  
HP3000 COBOL  
WANG COBOL or BASIC  
FORTRAN PROGRAMMERS  
PASCAL PROGRAMMERS  
TANDEM any levels (URGENT)  
CORAL BB  
VENTEK DATAPOINT, DATABUS  
DG INFOS, COBOL  
INTEL PLM Programmers  
VARIUM V77 COBOL, ASSEMBLER  
Hardware Engineers - Electronics  
TI COBOL PROGS  
CMC REALITY DATABASIC

Contact: STEVE WHITING, NEIL SMITH,  
STEVE CASEY, DEREK WADHAM  
DAVE PEART, DAVE LONKHURST,  
KEITH TAYLOR, PETER HOLLIDAY,  
MARK ATKINSON or SANDRA CAREY

#### URGENT

ICL COBOL VMEB  
SOME WITH IDMS or  
TPMS  
40 REQUIREMENTS  
ASAP

#### URGENT

VAX COBOL  
10 REQUIREMENTS  
TO START FROM NOW-JULY 82  
LONG TERM ASSIGNMENTS

#### OVERSEAS 0276 64252

#### SAUDI

Operations Analyst - Programmer -  
Analysts - System Designers/Consultants:  
IBM Large Systems & Commercial  
experience for Long Term assignments.  
Commencing July 82.  
Contact Bill Evans.

#### HOLLAND

Programmers DEC PDP11, RSX11,  
BASIC +2-3 month assignment  
Commencing July 82. - Commercial application.  
Contact Bill Evans.

#### OPERATORS 0276 64252

IBM DOS/VS VM CICS  
IBM MVS/JES 2  
Burroughs 67/B800 MCP  
ICL 2904 Exec.  
ICL George 2+/George 3  
Contact: ALAN PAINE

#### MIDLANDS & NORTH 021-742 4431

ICL VMEB COBOL IDMS or TPMS.

All Levels  
IBM, PL1 All Levels  
IBM CICS DL1 COBOL  
IBM COBOL with IMS  
HONEYWELL GCOS COBOL  
UNIVAC 1100 COBOL  
IDMS DATABASE Administrator  
Analysts Various Systems  
PDP RSX11/M BASIC + or BASIC + 2  
PDP/RSTS/E BASIC +  
FORTRAN PROGRAMMERS

#### URGENT

IBM ANALYSTS manufacturing back-  
ground ASAP  
UNIVAC OS3 RPG PROGRAMMERS  
RTL 2 Programmers

Contact: NEIL E. SMITH or KARIN  
LONGCROFT

#### PERMANENT VACANCIES 0276 64252

IBM System 34 RPG 11 Analyst/Program-  
mer 3 years + experience - Banking  
preferably.  
Bahrain to £15K Tax Free + accommodation/flight.

IBM Analysts & Programmers  
COBOL, DL1, CICS - SOUTH AFRICA  
Several urgent requirements for Analyst  
Programmers or Programmers with IBM  
GSD RPG11. Surrey to £11K.

(Retraining will be given on RPG11) -  
HP3000 COBOL PROGRAMMERS or  
ANALYST PROGRAMMER. Any com-  
mercial experience, various locations  
including Surrey, Middlesex, Berkshire.  
Excellent salaries plus relocation package.  
For further advice on these career moves  
contact Peter Jozeph or Bill Evans on  
Cambridge (0278) 64252 or write enclosing  
a detailed C.V.

#### SYS PROG

Surrey

to £15K

Min. five years' CICS and DL1 experience as a Systems Programmer or Technical Designer - 33% hour flexibility - 22 days holidays. (RD 3418)

#### SOFTWARE

Hants

to £11.5K

Two years' plus practical experience of R/T Systems Software using PDP-11, RSX, CORAL and/or MACRO. Ability to work on a variety of one-off projects and exercise individual skills. (TH 3354)

#### MVS

W. Country

to £13K

Systems Programmer to support and develop international terminal network. Must have at least two years' experience of supporting CICS/VS VTAM and NCP in a medium to large scale TP network. Appreciation of general MVS systems programmer. (TH 3150)

#### AN/PROG

S. Middx

to £12.5K

If you have good communication skills, two years' IBM COBOL, ideally using CICS, DL/1, then this international company can offer you challenging new project work together with a structured career path. Excellent benefits include five weeks' holiday. (JA 3464)

#### SSA

N.W. Middx

to £11.5K+

Your ability to be totally responsible for evaluating and designing these major new systems will result in this extremely rewarding project leader role. If you have three years' IBM analysis experience, together with an outgoing personality and good user liaison skills then take this opportunity now! (JA 2187)

#### T/LEADERS

Beds.

to £13K

Are you mature, responsible, possess good leadership qualities, whilst being personable and approachable? Have you five years' COBOL programming (pref. IBM) database, TP and supervisory experience? You're just the person we want! (HR 3295)

#### SALES

W. Berks

to £25K

Young dynamic sales personnel to sell colour graphics terminals to existing DEC user in London/area. An excellent opportunity to join this rapidly expanding company. (HR 3466)

#### HP 3000

Berks

to £12K

Programmer, Analyst/Programmers and Senior Analyst/Programmer required to join the new HQ of this well-established company. Exciting development work for people with strong COBOL backgrounds preferably Hewlett Packard. (HR 3466)

#### 450 DAYS

Berks

to £9K

IBM COBOL programming experience to work in small teams on a wide variety of projects. CICS exposure would be an advantage but is not essential. Ground floor opportunity to join this highly successful multinational company. (HR 3467)

#### FORTRAN

Cambs

to £9K

Constructional, engineering, survey and transportation graphics are the applications in which you can employ your two years' Fortran expertise. Good interpersonal skill and a degree would be added advantages. (GT 3052)

#### COBOL/IMS

Cambs

to £14K

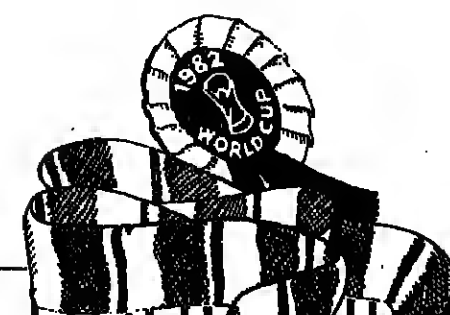
Analyst/Programmer to support and develop IMS applications in a medium to large scale TP network. Must have at least two years' experience of supporting CICS/VS VTAM and NCP in a medium to large scale TP network. Appreciation of general MVS systems programmer. (TH 3150)

#### ASSEMBLER

City

to £10K

Two years' + experience in mini Assembler coupled with effective communication ability could lead to customer liaison within small versatile team. T1980 and/or Intel experience an advantage. (GT 2244)



**TRIDENT** THE COMPANY THAT CARES  
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Norwich House, 13 Southampton Place, London WC1.



## Manager

### Systems and Applications Software

#### Microcomputer Manufacturer £14,500 + car Surrey based

The manufacturer of a successful range of 8 and 16 bit microcomputer systems seeks to appoint a key professional who will make a major contribution to the continued market penetration of the company's flexible product ranges throughout the UK and Europe.

With total system solutions addressing the £4,000 to £50,000 budget ranges, and distribution effected through a nationwide dealer network, our client attracts business from a significant percentage of both existing and new computer users in business, commerce and industry.

The vacant post of Software Manager, reporting directly to the UK General Manager, calls for an individual whose proven managerial and project leadership experience is backed up with sufficient technical exposure to enable the effective development and/or adoption of new software products and continuing support and expansion of existing customers' facilities.

This experience will have been gained in a mini or micro-computer environment, and where a record of success will have been in part due to the demonstration of effective powers of communication, innovation and applied initiative. In addition to direct responsibility for six head office hardware and software product specialists, the successful candidate will be required to coordinate and liaise with some 80-100 other technical and non-technical contacts throughout Europe and the USA. Therefore functional flexibility and mobility will play an important part within the day to day responsibilities of the incumbent.

**Should your profile not match up to this specification**, but the environment sound of interest to you in terms of the potential technical and career advantage you feel you would gain from working in this fast expanding area of the industry, then our client would be interested in talking with you about your micro based experience which should include exposure to a range of commercial applications, BASIC and/or ASSEMBLER language expertise, or an understanding of CP/M or similarly compatible environments.

In either case, to arrange an initial interview, please call Rex Ashcroft on 01-935 0671 during working hours, or Harlow (0279) 416529 evenings and weekends.

Technical, Sales & Management Appointments

#### Specialist Computer Recruitment Ltd

**SOUTH**  
James House, 46 James Street  
London W1M 5SS  
01-935 0671/488 0461

**MIDLANDS & INTERNATIONAL**  
35-37 Great Charles Street  
Queensway, Birmingham B3 3JY  
021-236 3781

**NORTH**  
Blackthorn House, The Painsage,  
Manchester M3 2JA  
061-833 0427

**BELGIUM**  
Avenue Louise 327  
Gate 4, 1050 Brussels  
010 322-640 7161/71

**HOLLAND**  
Willemsparkweg 92  
1071 H M Amsterdam  
010 3120-7609/7

#### Unix Systems Programmer

The Computing Division of the Rutherford Appleton Laboratory runs Unix V7 on a PDP 11/70, a PDP 11/44 and an LSI 11/23 which are part of a local area network based on a 10 MHz Cambridge Ring. Current development work includes Cambridge Ring protocol implementations, servers, a troll backend for a colour microfilm recorder and an X25 wide area networking connection.

Another major development is a virtual memory implementation of Unix on the ICL PERQ single user system involving high resolution graphics and local area connections. A Unix expert is required to develop Unix for this high quality, distributed systems environment.

The post is based at the Chilton site and will be in one of the following grades:

Scientific Officer £5,422-27,399  
Higher Scientific Officer £6,840-29,128

Some assistance with the expenses incurred in house sales/purchase may be available.

Appointment as a Higher Scientific Officer requires a good honours degree and several years experience in this field.

The Laboratory is a friendly community with its own restaurant and sports facilities nearby. We offer excellent working conditions and benefits include a local transport service, generous holidays, sick leave allowance and a non-contributory superannuation scheme.

For an application form please write to: Recruitment Office, Personnel Group, Science and Engineering Research Council, Rutherford Appleton Laboratory, Chilton, Didcot, Oxon OX11 0QX, quoting ref VN 058 or telephone Abingdon (0235) 21000 Ext. 510.

Closing date for applications: 16th July 1982

serc  Rutherford Appleton Laboratory

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DIRECT LINE  
01-661 0121

#### Thinking of moving on...

... to a Company which is committed to significant developments using VM/CMS, CICS and IDMS running in an IBM environment?

**DUN & BRADSTREET LTD.**, located in the City, is part of a worldwide organisation, providing financial and marketing services to the business community. Operating in a highly competitive market situation, Company plans for developments are involving the Computing Services Group in the utilisation of the latest techniques in data management, systems, and hardware.

To meet our ambitious objectives we are currently looking for the following personnel:

#### SENIOR ANALYST/ PROJECT LEADERS

c. £13K + PROFIT SHARE

Minimum of 5 years' experience in programming and analysis, preferably including online and/or database experience and capable of controlling projects from inception to implementation.

#### ANALYST/PROGRAMMERS

up to £10K + PROFIT SHARE

A sound knowledge of COBOL gained over at least 2 years, preferably with some exposure to systems analysis and design, and seeking career progression towards systems analysts in an online/database environment.

**INTERESTED?** Then contact either David Coates (01-628 3681 Ext. 267), John Rankin (01-628 3681 Ext. 207) or Tim Thorne (Slawley 052524 595 evenings), for an informal discussion. Alternatively, send a detailed c.v. with a covering letter to David Coates, Dun & Bradstreet Ltd., 6/8 Bonhill Street, London EC2A 4BU.

**Dun & Bradstreet Limited**

**DB** a company of  
Dun & Bradstreet International

#### Technical resources

... and availability of the very latest developments in D.P. technology backed by a friendly and effective management team, gives this leading software service organisation an enviable lead over competitors and ensures unparalleled scope for competent and versatile development personnel.

Our client has recently won several major new project assignments and now needs professionals who can make an immediate and effective contribution to a dynamic and forward thinking team. You will be investigating, developing and implementing some of the world's most advanced software in application areas ranging from commercial and financial systems through to production control, utilising data base and on-line techniques.

Major software tools include

**COBOL IDMS  
TPMS Georgeii  
VME/B TME**

The on-going training and career development of personnel is considered to be an integral part of our client's plan to stay at the top of this challenging and exciting industry.

All positions will carry the benefits normally associated with a successful International Company. It is essential that the calibre of personnel recruited is high, not only in skill terms but equally in manner, communicating ability, and sheer over-all professionalism for this team based:

#### In the West Midlands

If you're interested in a position of importance and responsibility, and would like to know more — then telephone asking for Leoric Kingford-Smith on **021-643 8801** or, after hours on **021-353 4400** or write with career details to Computer People Midlands (freepost), Alpha Tower, Birmingham B1 1BR. Alternatively, simply complete and return the freepost coupon today. Ref: LKS/801

Name \_\_\_\_\_  
Address \_\_\_\_\_  
Tel: (day) \_\_\_\_\_  
(eve/week) \_\_\_\_\_  
Ref: LKS/801

**Computer  
People  
Midlands**

#### and natural talents.

Our client needs high calibre individuals who are capable of working to tight schedules and budgets. Communication skills, appearance and professional outlook are as important as technical ability.

#### Project Managers £10-5k to £12k plus

The ability to manage people, prepare estimates and budgets, set realistic schedules and maintain a technical involvement whilst influencing senior management are qualities needed for this KEY ROLE.

#### Systems Analysts £8-5k to £10k plus

Forward thinkers with a design and programming background and ability to take a system from feasibility stage through to implementation.

#### Senior Programmers £7k to £9k plus

You will be writing full program specifications, programming in both on-line and batch applications and aiding the development of programmers whilst maintaining a close contact with users.

#### Programmers £6k to £8k plus

The ability to write effective programs and the desire to learn new techniques and advance to the very top of this team is essential for candidates considering this opportunity.

021-643 8801







The Mining Research and Development Establishment's programme covers research and development and testing in all fields of science and engineering associated with coal mining. The Computer Systems Development Branch is responsible for Minos computer systems which have been adopted as a standard by the NCB for colliery remote control and monitoring applications. Work is in progress to increase the range of facilities and applications for major projects such as the Selby colliery.

We have an opportunity for a

## Systems Software Engineer

to £10,000 plus benefits Burton-on-Trent

With knowledge of and interest in one or more of the following fields:  
\* real time operating systems \* device drivers \* reusable software \* systems utilities \* process control

Experience of PDP 11 and LS 11-11 systems, RSX 11M and Macro 11 is desirable. Applications are programmed in CORAL-66 and knowledge of this or another procedural language would be an advantage.

An excellent development environment includes twin PDP-11/70's and a VAX 11/750 together with multiple 11/34 and 11/23 systems. Major system developments being undertaken include extensions to the Minos operating system, peripheral support, and systems software for process control applications including monitoring coal face performance, monitoring and control of electrical distribution systems, protective control and management of underground and surface fixed plant such as fans, pumps and water distribution systems, coal transport network control and mine ventilation monitoring.

Salary will be in the range £6,000-£10,000 depending on qualifications and experience. Excellent benefits include nearly 6 weeks' annual holiday and self-financing incentive scheme.

Please write for an application form quoting ref. FY831 10:

**NCB**

D. J. Allsop, Staff and Administration Manager, National Coal Board, Mining Research and Development Establishment, Ashby Road, Burton-on-Trent, Staffs. DE15 000.

(0037)

## Saudi Arabia Tax Free Opportunities

A major computer consultancy organisation in Riyadh requires the following experienced staff for work in the Computer Centre of one of Saudi Arabia's Ministries

### Systems Programmers

c. £20,000

Degree, 8 years' experience with 4 year systems programming with IBM machines. Must have used DOS/VS and DOS/VSE. (Ref: L1601)

### Senior Systems Analysts

c. £18,500

A degree, plus extensive experience in IBM machines using OS/VS, DOS, DOS/VS, CICS, GRASP POWER, VS, experience of COBOL, ASSEMBLER, FORTRAN and PL/I. To examine new applications, formulate design and specifications. (Ref: L1597)

Twelve month renewable contracts will be offered to selected candidates. The above tax free salaries include a one month end of contract bonus. In addition selected candidates will receive free furnished accommodation, local transport allowance and 30 days U.K. leave with air tickets provided. Bachelor or married status.

Our client's need is urgent, so please telephone for an application form, quoting the relevant reference number to: Chris Jamieson, Lansdowne International Limited, Lansdowne House, 36 Great Smith Street, Westminster, London SW1 3BU.

Telephone  
01-222 3264  
(24 hours)

**Lansdowne**  
INTERNATIONAL RECRUITMENT CONSULTANTS

(5510)

LONDON BOROUGH OF SOUTHWARK

## I.C.L. OPERATOR OR CONTROLLER

£5,700 to £7,200 including London Weighting and Shift Allowance (salary under review)

An Operator/Controller is required where you will be responsible to a Shift Leader. This secure position, which necessitates two-shift working, carries with it attractive fringe benefits such as a generous annual leave entitlement, a subsidised canteen on the premises and an active sports and social club nearby.

Telephone 01-701 2870 any time for an application form or write on a postcard to: The Personnel Officer, London Borough of Southwark, 25 Commercial Way, London SE10 6DG. Please quote reference CW/83112 and job title. Last date for receipt of completed application form: 5.7.82.

(0909)

Metropolitan Borough of Solihull  
SOLIHULL INFORMATION TECHNOLOGY CENTRE

## SENIOR SUPERVISOR £8,733

For this new centre to be based at Coventry Road, Sheldon, Birmingham 26. We are looking for suitable qualified people who possess a recognised Computer qualification and have previous experience of programming micro - computers in Basic and Cobol. Teaching or commercial experience will be a necessary qualification.

The centre will provide up to one year's training in aspects of Information Technology for forty young people. The staff will consist of a manager, senior supervisor and six supervisors.

Application forms and details from:

Director of Education,  
PO Box 20  
Council House,  
Solihull  
West Midlands  
B91 3JU.

Please enclose a stamped addressed envelope.  
Closing date for applications - 14 days after the appearance of this advertisement.

0048

## ICL ME29 CONTRACTORS

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RING MAGGIE ON:  
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NETWORK COMPUTER STAFF  
18 JAMES STREET  
LONDON W1M 6HN

(0060)

## SYSTEMS & PROGRAMMING

### MANAGER - TECHNICAL SUPPORT

City-based Financial Services Company

Our client, a major services organisation involved in the financial market, requires a talented professional to manage all technical support functions within their dynamic and expanding IBM COBOL/VS, VM and CICS/VS, supporting an international telecommunications network connectivity and development of all systems software within this bureau services environment including the management of a 4-strong technical programming group. We would like to hear from candidates who possess a thorough knowledge of DOS/VS, have at least 3 years' systems programming experience plus previous involvement (or potential) in the supervision of technical personnel. Additionally, an outgoing personality is essential as is the ability to communicate complex ideas and techniques to personnel at all levels.

c. £1000

Ref: W1333

### SYSTEMS ANALYST

A major financial institution is seeking to recruit a systems analyst to join a team of professionals who are responsible for the quality control of the entire DP department. Candidates are expected to gain valuable experience within a progressive IBM environment. If you have a minimum of 3 years' analysis experience with a programming background, please now for further details.

To £2000

Ref: T1206

### SENIOR PROGRAMMERS

Our clients are a leading international bank based in the City whose commitment to OP assurance has created vacancies for 3 senior programmers. Candidates should have a strong IBM OS background and be self-motivated individuals who wish to make a positive career progress. Preference will be given to applicants with CICS and database experience.

c. £1000

Ref: T1334

### ANALYST/PROGRAMMER

A vacancy exists within a rapidly expanding services company for an analyst programmer to develop commercial systems for a variety of companies. If you have 3-4 years' COBOL experience and wish to further your career in a challenging environment, please contact us immediately for further details.

c. £1000

Ref: T1335

## OPERATIONS

### IBM DOS OPERATIONS

This manufacturing concern is seeking operations staff at both supervisory and operator levels. An opportunity exists at SHIFT LEADER level, for which applicants should possess a minimum of 2 years' experience in a VM/OS VSE and CICS environment; previous shift leading experience is essential. There is also a vacancy for an OPERATOR for which approximately 18 months' similar experience is required. Candidates should be self-motivated with a professional approach and the ability to work under pressure.

£7200-£10000

Ref: W1322

### IBM OS OP/SENIOR OPERATOR

This is an outstanding opportunity for a self-motivated OP professional to join an established but progressive installation. You should possess a minimum 18 months OS VSE1 experience and be fully conversant with JCL and Utilities. The hardware comprises an IBM mainframe and a rapidly expanding Communications Network utilising PDP equipment. The successful applicant can expect total job satisfaction and an interesting long term career path. Salary will be commensurate with experience and a superior range of benefits is offered inc. sub. MORTGAGE and annual BONUS.

£7,000-£8,100

Ref: W1322

### IBM DOS SHIFT LEADER

We have an excellent opportunity for a mature, highly-motivated individual who is seeking a career move into junior management. The successful candidate, who should be fully conversant with DOS VSE, JCL and Utilities in a TP environment, will progress to a DAYS ONLY role within 6 months. Reporting directly to the Operations Manager, you will be responsible for the daily running of the machine room, supervision and training of a small, busy team and first-line technical support. Current hardware comprises an IBM 4300 mainframe, running on a 2-shift system.

c. £7000 + £A

Ref: P1301

### IBM OS OPERATOR

Major financial organisation based in the City requires an operator with a minimum 18 months VM/VS1 experience; VMS would be an advantage. The successful applicant, who should be both mature and ambitious, will be required to operate a powerful dual-IBM configuration. A first class benefits package is offered which includes sub. MORTGAGE, annual BONUS, personal loans and n/c pension.

£7500

Ref: W1303

### UNIVAC SHIFT LEADER

We have been asked to assist in the recruitment of a Shift Leader with a minimum of 2 years' experience gained in a UNIVAC 1100 environment (preferably 1100/80). You should ideally possess a knowledge of Communications and Utilities. The successful applicant, who will be required to supervise a small team on a 'stepped' DAY-shift basis, can expect interesting long-term prospects as a result of future development plans. Usual large-company benefits apply.

c. £7500

Ref: P1327

### ICL 2904/ME29 OPERATORS

We have two clients who are currently seeking operators with a minimum of 18 months' 2904 or ME29 experience to work an extended DAY-shift rota. Please telephone for full details.

c. £2500

Ref: P1301

### IBM DOS/OS OPERATIONS

LONDON AND HOME COUNTIES  
We have a number of vacancies available for IBM operators with a minimum of 12 months' experience, some of which are listed below:

	SEN. OP.	VM/VS	3-shift	£2800
a) LONDON	OP. x 3	VM/VS/VS/IE	2-and 3-shift	£2800
b) ESSEX	OP. x 2	VM/VS/VS/IE	2-and 3-shift	£2800
c) E. LONDON	OP. x 2	DOS/VS	2-and 3-shift	£2800
d) BERKSHIRE	OP. x 2	DOS/VS	2-and 3-shift	£2800
e) MIDDLESEX	OP. x 2	DOS/VS	2-and 3-shift	£2800
f) C. LONDON	SEN. OP.	DOS/VS	2-shift	£2800
g) SURREY	OPS./SEN. OPS.	VM/VS1/VS	3-shift	£2800
h) ESSEX	SEN. OP.	MVS/JES 2	2-shift	£2800
i) BEDS.	OPS./SEN. OPS.	MVS/JES 2	3-4-shift	to £2800
j) BERKSHIRE	SHIFT LDR./SEN. OP.	MVS/JES 2	3-shift	to £2800

Ref: W1328

For full details of the above requirements, please telephone quoting the reference number.

### VARIOUS

BURROUGHS OPERATOR Medium Systems 2-shift  
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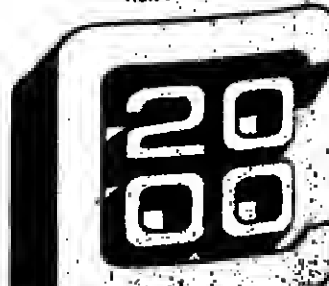
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Division is responsible for STC's software involvement in System X, with a number of dedicated project teams working on (1) Sub-system design, implementation and integration, and (2) System integration and development.

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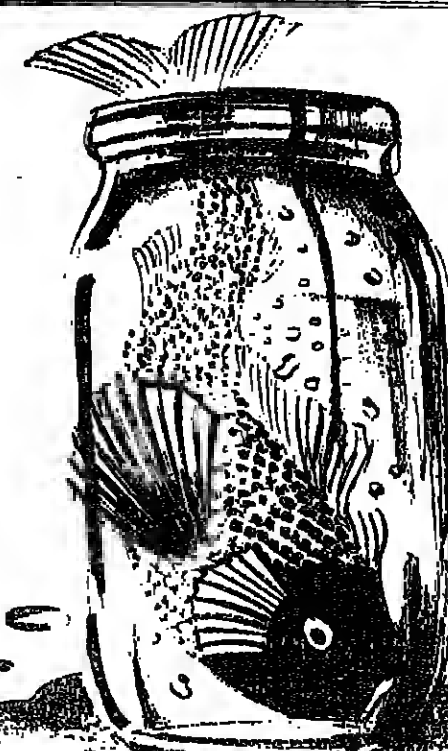
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- ★ Denotes immediate start.

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Deacon House  
Sawtooth Road  
Leeds LS14 6JD  
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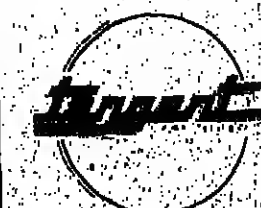
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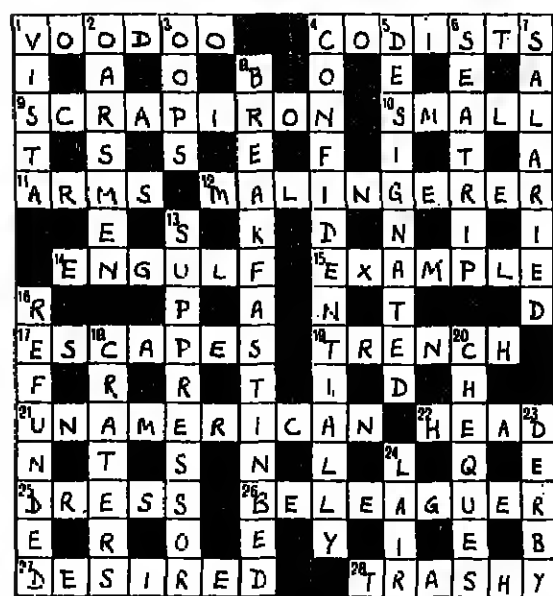
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**CROSSWORD**

Solution to Prize Crossword No 29



SHIRLEY Somerville, a systems analyst at West Middlesex Hospital, is the £10 winner in our competition for June. A £5 prize goes to William Gorman, a shift leader in the computer room at Leyland Vehicles, Bathgate, West Lothian, and to Geoff Smith, a freelance programmer who lives in Worcester Park, Surrey.

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## SYSTEMS PROGRAMMER

Norwich

Norfolk County Council and Norwich City Council's Joint Computer Department require an experienced IBM Systems Programmer.

The Department is planning conversion from OS/VS1 to MVS and a move from the present 370/158 to twin 4341/2 machines.

Suitable applicants will have experience in several of the following: MVS, JES2, CICS/VS, VTAM, NCP, PL1, GUTS, ASSEMBLER and VSAM. Consideration will be given to retraining experienced VS1 Systems Programmers in MVS and JES2.

The successful applicant will be part of a team of four and will be expected to take responsibility for a major area of software and to provide back-up for his/her colleagues in others.

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Further details from Ian McAlister, Chief Systems Programmer - (0603) 811122, extension 5155.

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## SYSTEMS ANALYST

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South Coast

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For an application form, job description and details of the Council's relocation scheme apply to: The Manpower Officer, Council Offices, Littlehampton, West Sussex BN17 5EP.

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### National Responsibility

### A Unique Career Opportunity!

The occurrence of a sales management job with national responsibility is not a common event, and when such appointments do appear they are invariably with completely new and unproven companies. When a major international company with an enormous investment in research and development, backed by powerful marketing facilities and considerable financial resources, goes into the market for a sales manager, it has to be a very special situation.

Our client is about to establish a sales organisation for the launch of a completely new computer system, which will be sold primarily to established computer users. They wish to recruit an experienced manager who has extensive field sales experience of mini and/or micro computer systems and has the skill to formulate policy and recruit his own team which will operate from a base in the

## North Home Counties

Candidates are likely to be currently working for a major computer manufacturer at branch sales management level or in a more senior capacity within a significant micro computer company.

Please provide complete career details to Alasdair Scott or Alan Williams, quoting reference WMA/062

**LONDON & SOUTH**  
29 Oxford Street  
London W1. (01) 734 9776

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## WEST YORKSHIRE METROPOLITAN COUNTY COUNCIL

## ANALYST PROGRAMMER

### POLICE PROJECT

£8991 - £9993 or £9528 - £10581

A vacancy exists for a Senior Analyst Programmer in the County Council Finance Department who will be seconded to the West Yorkshire Metropolitan Police Computer Project Unit, to assist in the current development and enhancement of an existing Ferranti Argus Real Time Command and Control Computer System. The System is Programmed in COBOL 68 and experience in that language is essential.

In addition to the above responsibilities the person appointed will be required to support the Police Project team on other existing and future computer applications.

Applications welcome from disabled people.

Application forms from Director of Manpower Services, B St John's North, Wakefield WF1 2QA (Telephone 357111 ext. 2841), to be returned by 8 July 1982.

Additional information can be obtained from Superintendent K. Bradshaw, West Yorkshire Metropolitan Police Computer Project Unit (Telephone Wakefield 375222 ext. 2240).

## SMR

Sales & Marketing Recruiters Ltd

## SALES EXECUTIVES

### TIME TO CONSULT THE SPECIALIST?

When you are dealing with the major factors in your life you can only afford the best, and few things are more important than the development of your career. Certainly, that is how the major computer manufacturers feel about their personnel selection and why such companies as CONTROL DATA, COMPUTER TECHNOLOGY, DATA GENERAL, HONEYWELL, PERKIN ELMER, REIFFUSON, PERRY LINVAC and many others continually use an organisation for the recruitment of experienced sales people.

We fully understand the needs of such companies as well as moving about the many job opportunities that never appear in the press. These well respected names depend on our professional skills and confidentiality. Can you afford loss?

Contact Alan Williams  
Peter Hubble or Alasdair Scott - ANYTIME! (0900)

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## BOX NUMBERS

Box number tapes should be addressed to:  
Box Number: 0000000000  
to Computer Weekly  
Quadrant House  
The Quadrant  
Sutton, Surrey SM2 5AS

## SALES BIT

### Quality of Management - 15

## So you think only other people have breakdowns?

MY job gives me an unusually wide contact with senior managers throughout the computer industry, and over the years one of my greatest pleasures has been the development of good personal relationships with many of them.

As the mutual confidence has progressed, and particularly since some of them became aware of the nervous breakdown I suffered early last year (remember those health farm stories as I emerged from the tunnel? - previous correspondents please note!) I have been surprised to learn how many are afflicted to some degree by the symptoms of stress.

If you are an aware manager you probably realise that a nervous problem is one of the occupational hazards. Nevertheless, its appearance always comes as a complete surprise, and once you've got it you either have no real perception of what you are suffering from or, if you have, you feel so perplexed and abnormal that the last thing you want to do is discuss it with anyone, least of all actually admit to suffering from it.

There are literally no limitations to the multifarious manifestations of stress. The managing director of a major minicomputer manufacturer once told me of an alarming stress-related experience: "I was driving home after work. It had been a hard day in a sequence of many and I was glad to be on my way. Suddenly I was struck with a strange sensation I can only describe as total unreality."

"It was as if my mind had been detached from my body, a removed and an unwilling observer of my own actions and emotions. The outside seemed to be pressing in; I was torn between the conflict of wanting to stop and the desperation of going home. "My neck and shoulder muscles went like iron. I gripped the steering wheel tightly and stared at the road ahead. I was sure that passing motorists were looking at me. Somehow I got home, feeling totally confused and more exhausted than I can remember. Yet after a sit-down and a cup of tea the feeling slowly went away."

"Looking back I know now that it could only have been the result of continuing, exposing myself to more pressure than could reasonably have been expected of me."

That is not the kind of experience one feels inclined to discuss with others for fear of appearing silly, inadequate or even - horror of horrors! - mentally ill. Even worse, there is the constant anxiety that the situation may recur, perhaps in less private and more embarrassing circumstances.

So you worry about it, and very soon the situation is compounded by not only the original anxiety that caused the original stress symptom but also the worry about the symptom itself. Readers will by now already be divided into two categories: those whose re-

action is "What on earth is this about?" and those who recognise the picture only too well. Of the former many are yet to experience the early warning signals of an overstressed metabolism, the price of enduring continual emotional pressure.

Another business friend, the managing director of a major computer manufacturer, always carries a single Vallium tablet around with him. He is thinking of mounting it in a glass box on his office wall with the legend "In case of emergency - break glass!"

The adverse effects of enduring too much stress are prevalent among people who operate in a management role. This situation must be compounded within a fast-moving, high-pressure business like the computer industry. Determination to achieve can be an extremely negative force if taken to excess.

What is stress, its symptoms and causes? As a non-medical person I can do no more than state experience-related opinions which may differ radically from established fact. However, one thing is without question: stress in moderation is a force for good. Few things in this life are achieved without some pressure to reach an established goal.

Management by objectives has become an integral part of everyday business life. Salespeople have quotas, workforces have production targets and many writers would never write a word if it were not for the artificial pressure of a publication deadline. It is when such pressure becomes both unmanageable and without a discernible end that stress becomes a destructive force.

It could be regarded as a human equivalent to nuclear power: contained it enhances, unleashed it destroys.

The causes of stress are unlimited; they differ as widely as people and circumstances. The effects are equally as widely as people and circumstances. The effects are equally diverse.

Make no mistake, inadequate performance for reasons of negative stress is common, subsequent nervous disorder is no respecter of rank or race, and most people think it could never happen to them.

As a friend of mine said, when learning I was "on the box": "I don't believe it, it's a hard case like you!"

More next week.

Alan Williams

## PUZZLE ANSWER

36	25
2	9
6	7
33	28